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(21) International Application Number: PCT/US98/11422 (22) International Filing Date: 4 June 1998 (04.06.98) (30) Priority Data: 60/048,915 6 June 1997 (06.06.97) US 60/048,882 6 June 1997 (06.06.97) US (Continued on the following page) (71) Applicant (for all designated States except US): HUMAN GENOME SCIENCES, INC. [US/US]; 9410 Key West Avenue, Rockville, MD 20850 (US). (72) Inventors; and (75) Inventors/Applicants (for US only): YOUNG, Paul [US/US]; 122 Beckwith Street, Gaithersburg, MD 20878 (US). GREENE, John, M. [US/US]; 872 Diamond Drive, Gaithersburg, MD 20878 (US). FERRIE, Ann, M. [US/US]; 13203 L Astoria Hill Court, Germantown, MD 20874 (US). RUBEN, Steven, M. [US/US]; 18528 Heritage Hills Drive, Olney, MD 20832 (US). ROSEN, Craig, A. [US/US]; 22400 Rolling Hill Road, Laytonsville, MD 20882 (US). HU, Jing-Shan [CN/US]; 1247 Lakeside Drive #3034, Sunnyvale, CA 94086 (US). OLSEN, Henrik, S. [DK/US]; 182 Kendrick Place #24, Gaithersburg, MD 20878 (US). EBNER, Reinhard [DE/US]; 9906 Shelburne Terrace #316,		Gaithersburg, MD 20878 (US). BREWER, Laurie, A. [US/US]; 14920 Mt. Nebo Road, Poolesville, MD 20837 (US). MOORE, Paul, A. [GB/US]; Apartment 104, 1908 Holly Ridge Drive, McLean, VA 22102 (US). SHI, Yanggu [CN/US]; 437 West Side Drive, Gaithersburg, MD 20878 (US). FLORENCE, Charles [US/US]; (US). FLORENCE, Kimberly [US/US]; 12805 Atlantic Avenue, Rockville, MD 20851 (US). LAFLEUR, David, W. [US/US]; 1615 Q Street, N.W. #807, Washington, DC 20009 (US). NI, Jian [CN/US]; 5502 Manorfield Road, Rockville, MD 20853 (US). FAN, Ping [CN/US]; Apartment 302, 335 West Side Drive, Gaithersburg, MD 20878 (US). WEI, Ying-Fei [CN/US]; 13524 Straw Bale Lane, Darnestown, MD 20878 (US). FISCHER, Carrie, L. [US/US]; 5810 Hall Street, Burke, VA 22015 (US). SOPPET, Daniel, R. [US/US]; 15050 Stillfield Place, Centreville, VA 22020 (US). LI, Yi [CN/US]; 1247 Lakeside Drive #3034, Sunnyvale, CA 94086 (US). ZENG, Zhizhen [CN/US]; 13950 Saddleview Drive, Gaithersburg, MD 20878 (US). KYAW, Hla [MM/US]; 520 Sugarbush Circle, Frederick, MD 21703 (US). YU, Guo-Liang [CN/US]; 13524 Straw Bale Lane, Darnestown, MD 20878 (US). FENG, Ping [CN/US]; 4 Relda Court, Gaithersburg, MD 20878 (US). DILLON, Patrick, J. [US/US]; 1055 Snipe Court, Carlsbad, CA 92009 (US). ENDRESS, Gregory, A. [US/US]; 9729 Clagett Farm Drive, Potomac, MD 20854 (US). CARTER, Kenneth, C. [US/US]; 11601 Brandy Hall Lane, North Potomac, MD 20878 (US). (74) Agents: HOOVER, Kenley, K. et al.; Human Genome Sciences, Inc., 9410 Key West Avenue, Rockville, MD 10850 (US). (81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published With declaration under Article 17(2)(a); without abstract; title not checked by the International Searching Authority.
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207 Human Secreted Proteins

Field of the Invention

This invention relates to newly identified polynucleotides and the polypeptides encoded by these polynucleotides, uses of such polynucleotides and polypeptides, and their production.

Background of the Invention

Unlike bacterium, which exist as a single compartment surrounded by a membrane, human cells and other eucaryotes are subdivided by membranes into many functionally distinct compartments. Each membrane-bounded compartment, or organelle, contains different proteins essential for the function of the organelle. The cell uses "sorting signals," which are amino acid motifs located within the protein, to target proteins to particular cellular organelles.

One type of sorting signal, called a signal sequence, a signal peptide, or a leader sequence, directs a class of proteins to an organelle called the endoplasmic reticulum (ER). The ER separates the membrane-bounded proteins from all other types of proteins. Once localized to the ER, both groups of proteins can be further directed to another organelle called the Golgi apparatus. Here, the Golgi distributes the proteins to vesicles, including secretory vesicles, the cell membrane, lysosomes, and the other organelles.

Proteins targeted to the ER by a signal sequence can be released into the extracellular space as a secreted protein. For example, vesicles containing secreted proteins can fuse with the cell membrane and release their contents into the extracellular space - a process called exocytosis. Exocytosis can occur constitutively or after receipt of a triggering signal. In the latter case, the proteins are stored in secretory vesicles (or secretory granules) until exocytosis is triggered. Similarly, proteins residing on the cell membrane can also be secreted into the extracellular space by proteolytic cleavage of a "linker" holding the protein to the membrane.

Despite the great progress made in recent years, only a small number of genes encoding human secreted proteins have been identified. These secreted proteins include the commercially valuable human insulin, interferon, Factor VIII, human growth hormone, tissue plasminogen activator, and erythropoietin. Thus, in light of the pervasive role of secreted proteins in human physiology, a need exists for identifying and characterizing novel human secreted proteins and the genes that encode them. This knowledge will allow one to detect, to treat, and to prevent medical disorders by using secreted proteins or the genes that encode them.

Summary of the Invention

The present invention relates to novel polynucleotides and the encoded polypeptides. Moreover, the present invention relates to vectors, host cells, antibodies, and recombinant methods for producing the polypeptides and polynucleotides. Also provided are diagnostic methods for detecting disorders related to the polypeptides, and therapeutic methods for treating such disorders. The invention further relates to screening methods for identifying binding partners of the polypeptides.

Detailed Description

Definitions

The following definitions are provided to facilitate understanding of certain terms used throughout this specification.

In the present invention, "isolated" refers to material removed from its original environment (e.g., the natural environment if it is naturally occurring), and thus is altered "by the hand of man" from its natural state. For example, an isolated polynucleotide could be part of a vector or a composition of matter, or could be contained within a cell, and still be "isolated" because that vector, composition of matter, or particular cell is not the original environment of the polynucleotide.

In the present invention, a "secreted" protein refers to those proteins capable of being directed to the ER, secretory vesicles, or the extracellular space as a result of a signal sequence, as well as those proteins released into the extracellular space without necessarily containing a signal sequence. If the secreted protein is released into the extracellular space, the secreted protein can undergo extracellular processing to produce a "mature" protein. Release into the extracellular space can occur by many mechanisms, including exocytosis and proteolytic cleavage.

As used herein, a "polynucleotide" refers to a molecule having a nucleic acid sequence contained in SEQ ID NO:X or the cDNA contained within the clone deposited with the ATCC. For example, the polynucleotide can contain the nucleotide sequence of the full length cDNA sequence, including the 5' and 3' untranslated sequences, the coding region, with or without the signal sequence, the secreted protein coding region, as well as fragments, epitopes, domains, and variants of the nucleic acid sequence. Moreover, as used herein, a "polypeptide" refers to a molecule having the translated amino acid sequence generated from the polynucleotide as broadly defined.

In the present invention, the full length sequence identified as SEQ ID NO:X was often generated by overlapping sequences contained in multiple clones (contig

analysis). A representative clone containing all or most of the sequence for SEQ ID NO:X was deposited with the American Type Culture Collection ("ATCC"). As shown in Table 1, each clone is identified by a cDNA Clone ID (Identifier) and the ATCC Deposit Number. The ATCC is located at 10801 University Boulevard,
5 Manassas, Virginia 20110-2209, USA. The ATCC deposit was made pursuant to the terms of the Budapest Treaty on the international recognition of the deposit of microorganisms for purposes of patent procedure.

A "polynucleotide" of the present invention also includes those polynucleotides capable of hybridizing, under stringent hybridization conditions, to sequences contained
10 in SEQ ID NO:X, the complement thereof, or the cDNA within the clone deposited with the ATCC. "Stringent hybridization conditions" refers to an overnight incubation at 42°C in a solution comprising 50% formamide, 5x SSC (750 mM NaCl, 75 mM sodium citrate), 50 mM sodium phosphate (pH 7.6), 5x Denhardt's solution, 10% dextran sulfate, and 20 µg/ml denatured, sheared salmon sperm DNA, followed by washing the
15 filters in 0.1x SSC at about 65°C.

Also contemplated are nucleic acid molecules that hybridize to the polynucleotides of the present invention at lower stringency hybridization conditions. Changes in the stringency of hybridization and signal detection are primarily accomplished through the manipulation of formamide concentration (lower percentages
20 of formamide result in lowered stringency); salt conditions, or temperature. For example, lower stringency conditions include an overnight incubation at 37°C in a solution comprising 6X SSPE (20X SSPE = 3M NaCl; 0.2M NaH₂PO₄; 0.02M EDTA, pH 7.4), 0.5% SDS, 30% formamide, 100 µg/ml salmon sperm blocking DNA; followed by washes at 50°C with 1XSSPE, 0.1% SDS. In addition, to achieve even
25 lower stringency, washes performed following stringent hybridization can be done at higher salt concentrations (e.g. 5X SSC).

Note that variations in the above conditions may be accomplished through the inclusion and/or substitution of alternate blocking reagents used to suppress background in hybridization experiments. Typical blocking reagents include
30 Denhardt's reagent, BLOTTO, heparin, denatured salmon sperm DNA, and commercially available proprietary formulations. The inclusion of specific blocking reagents may require modification of the hybridization conditions described above, due to problems with compatibility.

Of course, a polynucleotide which hybridizes only to polyA+ sequences (such
35 as any 3' terminal polyA+ tract of a cDNA shown in the sequence listing), or to a

complementary stretch of T (or U) residues, would not be included in the definition of "polynucleotide," since such a polynucleotide would hybridize to any nucleic acid molecule containing a poly (A) stretch or the complement thereof (e.g., practically any double-stranded cDNA clone).

5 The polynucleotide of the present invention can be composed of any polyribonucleotide or polydeoxribonucleotide, which may be unmodified RNA or DNA or modified RNA or DNA. For example, polynucleotides can be composed of single- and double-stranded DNA, DNA that is a mixture of single- and double-stranded regions, single- and double-stranded RNA, and RNA that is mixture of single- and
10 double-stranded regions, hybrid molecules comprising DNA and RNA that may be single-stranded or, more typically, double-stranded or a mixture of single- and double-stranded regions. In addition, the polynucleotide can be composed of triple-stranded regions comprising RNA or DNA or both RNA and DNA. A polynucleotide may also contain one or more modified bases or DNA or RNA backbones modified for stability
15 or for other reasons. "Modified" bases include, for example, tritylated bases and unusual bases such as inosine. A variety of modifications can be made to DNA and RNA; thus, "polynucleotide" embraces chemically, enzymatically, or metabolically modified forms.

 The polypeptide of the present invention can be composed of amino acids joined
20 to each other by peptide bonds or modified peptide bonds, i.e., peptide isosteres, and may contain amino acids other than the 20 gene-encoded amino acids. The polypeptides may be modified by either natural processes, such as posttranslational processing, or by chemical modification techniques which are well known in the art. Such modifications are well described in basic texts and in more detailed monographs,
25 as well as in a voluminous research literature. Modifications can occur anywhere in a polypeptide, including the peptide backbone, the amino acid side-chains and the amino or carboxyl termini. It will be appreciated that the same type of modification may be present in the same or varying degrees at several sites in a given polypeptide. Also, a given polypeptide may contain many types of modifications. Polypeptides may be
30 branched, for example, as a result of ubiquitination, and they may be cyclic, with or without branching. Cyclic, branched, and branched cyclic polypeptides may result from posttranslation natural processes or may be made by synthetic methods. Modifications include acetylation, acylation, ADP-ribosylation, amidation, covalent attachment of flavin, covalent attachment of a heme moiety, covalent attachment of a
35 nucleotide or nucleotide derivative, covalent attachment of a lipid or lipid derivative, covalent attachment of phosphatidylinositol, cross-linking, cyclization, disulfide bond formation, demethylation, formation of covalent cross-links, formation of cysteine,

formation of pyroglutamate, formylation, gamma-carboxylation, glycosylation, GPI anchor formation, hydroxylation, iodination, methylation, myristoylation, oxidation, pegylation, proteolytic processing, phosphorylation, prenylation, racemization, selenoylation, sulfation, transfer-RNA mediated addition of amino acids to proteins such as arginylation, and ubiquitination. (See, for instance, PROTEINS -
5 STRUCTURE AND MOLECULAR PROPERTIES, 2nd Ed., T. E. Creighton, W. H. Freeman and Company, New York (1993); POSTTRANSLATIONAL COVALENT MODIFICATION OF PROTEINS, B. C. Johnson, Ed., Academic Press, New York, pgs. 1-12 (1983); Seifter et al., Meth Enzymol 182:626-646 (1990);
10 Rattan et al., Ann NY Acad Sci 663:48-62 (1992).)

"SEQ ID NO:X" refers to a polynucleotide sequence while "SEQ ID NO:Y" refers to a polypeptide sequence, both sequences identified by an integer specified in Table 1.

"A polypeptide having biological activity" refers to polypeptides exhibiting
15 activity similar, but not necessarily identical to, an activity of a polypeptide of the present invention, including mature forms, as measured in a particular biological assay, with or without dose dependency. In the case where dose dependency does exist, it need not be identical to that of the polypeptide, but rather substantially similar to the dose-dependence in a given activity as compared to the polypeptide of the present
20 invention (i.e., the candidate polypeptide will exhibit greater activity or not more than about 25-fold less and, preferably, not more than about tenfold less activity, and most preferably, not more than about three-fold less activity relative to the polypeptide of the present invention.)

25 **Polynucleotides and Polypeptides of the Invention**

FEATURES OF PROTEIN ENCODED BY GENE NO: 1

This gene is expressed primarily in melanocytes and, to a lesser extent, in testes, ovary, kidney and other tissues.

30 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, cancer, disorders of neural crest derived cells including pigmentation defects, melanoma, reproductive organ defects, and defects of the kidney. Similarly,
35 polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the skin,

reproductive, and renal systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treating disorders that arise from alterations in the number or fate of neural crest derived cells including cancers such as melanoma and defects of the developing reproductive system.

FEATURES OF PROTEIN ENCODED BY GENE NO: 2

This gene is expressed primarily in infant brain and fetal lung.

- Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, developmental disorders of the brain or lung. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the central nervous and pulmonary systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treating or diagnosing disorders associated with abnormal proliferation of cells in the Central nervous system and developing lung.

FEATURES OF PROTEIN ENCODED BY GENE NO: 3

This gene is expressed primarily in breast lymph node and to a lesser extent in ovarian cancer and chondrosarcoma.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, immune responses such as inflammation or immune surveillance for

tumors. This gene may be important for inflammatory responses associated with tumors. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 236 as residues: Lys-45 to Val-50, Lys-69 to Arg-76.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment or diagnosis of immune responses including those associated with tumor-induced inflammation.

FEATURES OF PROTEIN ENCODED BY GENE NO: 4

This gene is expressed primarily in T-cells and T-cell lymphomas.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, immunological diseases involving T-cells such as inflammation, autoimmunity, and cancers including T-cell lymphomas. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of T-cells and other cells of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosing and treating T-cell based disorders such as inflammatory diseases, autoimmune disease and tumors including T-cell lymphomas.

FEATURES OF PROTEIN ENCODED BY GENE NO: 5

This gene is expressed primarily in activated monocytes.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, inflammation, autoimmunity, infection, or disorders involving activation of monocytes. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 238 as residues: Asp-19 to Arg-31.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosing or treating diseases that result in activation of monocytes including infections, inflammatory responses or autoimmune diseases.

FEATURES OF PROTEIN ENCODED BY GENE NO: 6

The translation product of this gene shares sequence homology with terminal deoxynucleotidyltransferase which is thought to be important in catalyzing the elongation of oligo- or polydeoxynucleotide chains.

This gene is expressed primarily in activated human neutrophils.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions which include, but are not limited to, cancer, particularly those of the blood such as leukemia and deficiencies in neutrophils such as neutropenia. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the cardiovascular system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having

such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to terminal deoxynucleotidyltransferase indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment and differential diagnosis of acute leukemia's. Alternatively, this gene may function in the proliferation of neutrophils and be useful as a treatment for neutropenia, for example, following neutropenia as a result of chemotherapy.

FEATURES OF PROTEIN ENCODED BY GENE NO: 7

The contig exhibits a reasonable homology to the human chorionic gonadotropic (HCG) analogue-GT beta-subunit as disclosed in U.S. Patent No. 5,508,261 and PCT Publication No. WO 92/22568. There is a high degree of conservation of the structurally important cysteine residues in these identities.

- This gene is expressed primarily in IL-1 and LPS induced neutrophils.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, diseases of the immune system, including inflammatory diseases and allergies. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment/diagnosis of diseases of the immune system since expression is primarily in neutrophils, and may be useful as a growth factor for the differentiation or proliferation of neutrophils for the treatment of neutropenia following chemotherapy.

FEATURES OF PROTEIN ENCODED BY GENE NO: 8

This gene is expressed primarily in IL-1- and LPS-induced neutrophils.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a

biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, diseases of the immune system, including inflammatory diseases and allergies. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 241 as residues: Ser-14 to Pro-22, Leu-43 to Val-53.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment and diagnosis of diseases of the immune system since expression is primarily in neutrophils, and may be useful as a growth factor for the differentiation or proliferation of neutrophils for the treatment of neutropenia following chemotherapy.

FEATURES OF PROTEIN ENCODED BY GENE NO: 9

This gene is expressed primarily in IL-1 and LPS induced neutrophils.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, diseases of the immune system, including inflammatory diseases and allergies. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 242 as residues: Tyr-22 to His-35.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment/diagnosis of diseases of the immune system since expression is primarily in neutrophils, and may be useful as a growth

factor for the differentiation or proliferation of neutrophils for the treatment of neutropenia following chemotherapy.

FEATURES OF PROTEIN ENCODED BY GENE NO: 10

5 This gene is expressed primarily in activated T-cells and to a lesser extent in endothelial cells.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, immune dysfunctions including cancer of the T lymphocytes and autoimmune disorders and inflammation. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

20 The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment and diagnosis of immune disorders particularly of T-cell origin and may act as a growth factor for particular subsets of T-cells such as CD4 positive cells which would make this a useful therapeutic for the treatment of HIV and other immune compromising illnesses.

FEATURES OF PROTEIN ENCODED BY GENE NO: 11

This gene is expressed primarily in fetal tissue.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of many developmental abnormalities. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the developing fetus, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e.,

the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful as a growth factor or differentiation factor for particular cell types in the developing fetus and may be useful in replacement or other types of therapy in cases where the gene is expressed aberrantly.

FEATURES OF PROTEIN ENCODED BY GENE NO: 12

This gene is expressed primarily in T-cells and to a lesser extent in tumor tissue including glioblastoma, meningioma, and Wilm's tumor.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, diseases of the immune system including autoimmune conditions such as rheumatoid arthritis, inflammatory disorders and cancer. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 245 as residues: Thr-9 to Ser-14.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis/ modulation of immune function disorders, including rheumatoid arthritis and inflammatory responses.

FEATURES OF PROTEIN ENCODED BY GENE NO: 13

This gene is expressed primarily in placenta and to a lesser extent in fetal liver and bone marrow.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of hematological disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of

disorders of the above tissues or cells, particularly of the hematological and immune systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample
5 taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful as a growth factor for hematopoietic stem cells or
10 progenitor cells in the treatment of chemotherapy patients or kidney disease.

FEATURES OF PROTEIN ENCODED BY GENE NO: 14

This gene is expressed primarily in stromal cells.

Therefore, polynucleotides and polypeptides of the invention are useful as
15 reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of hematopoietic disorders including cancer, neutropenia, anemia, and thrombocytopenia. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of
20 the above tissues or cells, particularly of the hematopoietic and immune, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e.,
25 the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful as a growth factor for hematopoietic stem cells or
30 progenitor cells, in particular following chemotherapy treatment.

FEATURES OF PROTEIN ENCODED BY GENE NO: 15

The translation product of this gene shares sequence homology with epsilon-COP from *Bos taurus* which is thought to be important as a component of coatamer, a complex of seven proteins, that is the major component of the non-clathrin membrane
35 coat. Preferred polypeptides encoded by this gene comprise the following amino acid sequences:

MAPPAPGPASGGSGEVDELFDVKNAFYIGSYQQCINEAXXVKLSSPERDVERD

VFLYRAYLAQRKFGVVLDEIKPSSAPELQAVRMFADYLAHESRRDSIVAELDRE
 MSRSXDVTNTTFLMAASIYLHDQNPDAALRALHQGDSLECTAMTVQILLKLD
 RLDLARKELKRMQDLDEDATLTQLATAWVSLATGGEKLQDAYYIFQEMADKCS
 PTLNLLNGQAACHMAQGRWEAAEGLLQEALDKDSGYPETLVNLIVLSQHLGKP
 5 PEVTNRYLSQLKDAHRSHPIKEYQAKENDFDRLVLQYAPSAEAGPELSGP
 (SEQ ID NO:458); or RDVERDVFLYRAYLAQRKFGVVLDEIKPSSAPELQAVRMF
 ADYLAHESRRDSIVAELDREMSRSXDVTNTTFLMAASIYLHDQNPDAALRALH
 QGDSLECTAMTVQILLKLDRLDLARKELKRMQDLDEDATLTQLATAWVSLATG
 GEKLQDAYYIFQEMADKCSPTLNNNGQAACHMAQGRWEAAEGLLQEALDKD
 10 SGYPETLVNLIVLSQHLGKPPPEVTNRYLSQLKDAHRSHPIKEYQAKENDFDRL
 VLQYAPSA (SEQ ID NO:459).

This gene is expressed primarily in activated monocytes and T-cells, and to a lesser extent in multiple other tissues.

Therefore, polynucleotides and polypeptides of the invention are useful as
 15 reagents for differential identification of the tissue(s) or cell type(s) present in a
 biological sample and for diagnosis of diseases and conditions, which include, but are
 not limited to, immunomodulation, specifically relating to transport problems in these
 cells. Similarly, polypeptides and antibodies directed to these polypeptides are useful in
 providing immunological probes for differential identification of the tissue(s) or cell
 20 type(s). For a number of disorders of the above tissues or cells, particularly of the
 immune, expression of this gene at significantly higher or lower levels may be routinely
 detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g.,
 serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample
 taken from an individual having such a disorder, relative to the standard gene
 25 expression level, i.e., the expression level in healthy tissue or bodily fluid from an
 individual not having the disorder.

The tissue distribution and homology to epsilon-COP indicates that
 polynucleotides and polypeptides corresponding to this gene are useful for treating
 /diagnosing problems with the cellular transport of proteins that may result in
 30 immunologic dysfunction.

FEATURES OF PROTEIN ENCODED BY GENE NO: 16

The translation product of this gene shares sequence homology with an RNA
 helicase which is thought to be important in polynucleotide metabolism. The translation
 35 product of this contig exhibits good homology to the LbeIF4A antigen of *Leishmania*
braziliensis. The LbeIF4A antigen, or immunogenic portions of it, can be used to
 induce protective immunity against leishmaniasis, specifically *L. donovani*, *L. chagasi*,

L. infantum, L. major, L. braziliensis, L. panamensis, L. tropica and L. guyanensis. It can also be used diagnostically to detect Leishmania infection or to stimulate a cellular and/or humoral immune response or to stimulate the production of interleukin-12.

5 This gene is expressed primarily in colon cancer and to a lesser extent in pituitary.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of cancers particularly of the colon. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing
10 immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the gastrointestinal system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample
15 taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 249 as residues: Glu-93 to Ala-98, Gln-150 to Leu-156, Leu-220 to Leu-231, Leu-268 to Arg-273, Val-324 to Pro-341, Arg-372 to Asn-
20 380, Ser-405 to Gly-410, Phe-426 to Ala-433, Glu-458 to Asp-470, Arg-506 to Ser-547.

The tissue distribution and homology to RNA helicase indicates that polynucleotides and polypeptides corresponding to this gene are useful for development of diagnostic tests for colon cancer.

25

FEATURES OF PROTEIN ENCODED BY GENE NO: 17

The translation product of this contig has sequence homology to a cytoplasmic protein that binds specifically to JNK designated the JNK interacting protein-1 or JIP-1 in mice. JIP-1 caused cytoplasmic retention of JNK and inhibition of JNK-regulated
30 gene expression.

This gene is expressed primarily in brain including pituitary cerebellum frontal cortex, fetal brain and to a lesser extent in the kidney cortex.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a
35 biological sample and for diagnosis of the central nervous system disorders including ischemia, epilepsy, Parkinson's disease, and schizophrenia. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological

probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the central nervous system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Furthermore, the translation product of this contig may suppress the effects of the JNK signaling pathway on cellular proliferation, including transformation by the Bcr-Abl oncogene. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 250 as residues: Pro-6 to Ser-26, Ala-30 to Asp-41, Gly-55 to Ser-61, Gly-74 to Thr-80, Tyr-117 to Ala-123, Tyr-167 to Asp-172, Ala-212 to Cys-223, Pro-239 to Tyr-244.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for enhanced survival and/or differentiation of neurons as a treatment for neurodegenerative disease.

FEATURES OF PROTEIN ENCODED BY GENE NO: 18

The translation product of this gene shares sequence homology with a liver stage antigen from a protozoan parasite.

This gene is expressed primarily in fetal tissue and to a lesser extent in activated T-cells and other immune cells.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, developmental abnormalities and diseases of immune function. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to a protozoan antigen indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment/immune modulation of parasitic infections.

5 FEATURES OF PROTEIN ENCODED BY GENE NO: 19

Preferred polypeptide encoded by this gene comprise the following polypeptide sequences:

MKAIGIEPSLATYHHIIRLFDQPGDPLKRSSFIIYDIMNELMGKRFSPKD
 PDDDKFFQSAMSICSSLRDLELAYQVHGLLKTGDNWKFIGPDQHRNFYYSKFF
 10 DLICLMEQIDVTLKWYEDLIPSA YFPHSQTMIHLLQALDVANRLEVIPKIWER
 (SEQ ID NO:460); and/or KDSKEYGHTFRSDLREEILMLMARDKHPPQLQVAF
 ADCAADIKSAYESQPIRQTAQDWPATSLNCIAILFLRAGRTQEAWKMLGLFRKH
 NKIPRSELLNELMDSA KVSNSPSQAIEVVELASAFSLPICEGLTQRVMSDFAINQ
 EQKEALS NLTALTS DSDTSDSSSDSDTSEGG (SEQ ID NO:461). Polynucleotides

15 encoding such polypeptides are also provided.

This gene is expressed primarily in stromal and CD34 depleted bone marrow cells and to a lesser extent in tissues of embryonic origin.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a
 20 biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, diseases of hematologic origin including cancers and immune dysfunction. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of
 25 the hematopoietic and immune, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily
 30 fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 252 as residues: Ser-28 to Gln-34.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful as a growth factor for hematopoietic stem cells or progenitor cells which may be useful in the treatment of chemotherapy patients
 35 suffering from neutropenia.

FEATURES OF PROTEIN ENCODED BY GENE NO: 20

Preferred polypeptide fragments can be found in an alternative open reading frame. These preferred polypeptides comprise the amino acid sequence:

MSSDNESDIEDLKLRLRDLKHLKEIQDLQSRQKHEIESLYTKLGKVPPAVI
 5 IPPAAPLSGRRRRPTKSKGSKSSRSSLGNKSPQLSGNLSGQSAASVLHPQOTL
 HPPGNIPESGQNQLLQPLKPSRSSDNLYSFTSDGAISVPSLSAPGQGTSSNTV
 GATVNSQAAQAQPPAMTSSRKGTFTDDLHKLVDNWARDAMNLSGRRGSKGH
 MNYEGPGMARKFSAPGQLCISMSTNLGGSAPISAASATSLGHFTKSMCPPQQY
 GFPATPFGAQWSGTGGPAPQLGQFQPVGTASLQNFNISNLQKSISNPPGSNL
 10 RTT (SEQ ID NO:462); IQDLQSRQKHEIESLYTKLGKVPPAVIIPPAAPLSGRRRR
 PTKSKGSKSSRSSLGNKSPQLSGNLSGQSAASVLHPQOTLHPPGNIPESGQN
 QLLQPLKPSRSSDNLYSFTSDGAISVPSLSAPGQGTSS (SEQ ID NO:463);
 TSDGAISVPSLSAPGQGTSSNTV GATVNSQAAQAQPPAMTSSRKGTFTDDLH
 (SEQ ID NO:464); KGHMNYEGPGMARKFSAPGQLCISMSTNLGGSAPISAAS
 15 ATSLGHFTK (SEQ ID NO:465); QPLKPSRSSDNLYSFTSDGAISVPSLSAPG
 (SEQ ID NO:466). Also preferred are polynucleotide fragments encoding these
 polypeptide fragments.

This gene is expressed in fetal liver and tissues associated with the CNS.

Therefore, polynucleotides and polypeptides of the invention are useful as
 20 reagents for differential identification of the tissue(s) or cell type(s) present in a
 biological sample and for diagnosis of diseases and conditions, which include, but are
 not limited to, liver and CNS diseases. Similarly, polypeptides and antibodies directed
 to these polypeptides are useful in providing immunological probes for differential
 identification of the tissue(s) or cell type(s). For a number of disorders of the above
 25 tissues or cells, particularly of the liver and CNS, expression of this gene at
 significantly higher or lower levels may be routinely detected in certain tissues (e.g.,
 cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial
 fluid or spinal fluid) or another tissue or cell sample taken from an individual having
 such a disorder, relative to the standard gene expression level, i.e., the expression level
 30 in healthy tissue or bodily fluid from an individual not having the disorder. Preferred
 epitopes include those comprising a sequence shown in SEQ ID NO: 253 as residues:
 Gln-26 to Lys-34.

The tissue distribution indicates that polynucleotides and polypeptides
 corresponding to this gene are useful for diagnosis and treatment for liver diseases such
 35 as hepatocellular carcinomas and diseases of the CNS.

FEATURES OF PROTEIN ENCODED BY GENE NO: 21

In an alternative reading frame, this gene shows sequence homology to two recently cloned genes, karyopherin beta 3 and Ran_GTP binding protein 5. (See Accession Nos. gil2102696 and gnllPIDe328731.) The Ran_GTP binding protein is related to importin-beta, the key mediator of nuclear localization signal (NLS)-dependent nuclear transport. Based on homology, it is likely that this gene may activity similar to the RAN_GTP binding protein. Preferred polypeptide fragments comprise the amino acid sequence: VRVAAESMXLLLECAxVRGPEYLTQMWHFMCDALIKA IGTEPDSDVLSEIMHSFAK (SEQ ID NO:467). Also preferred are polynucleotide fragments encoding these polypeptide fragments.

This gene is expressed in thymus tissue.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, immune disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment for immune disorders.

FEATURES OF PROTEIN ENCODED BY GENE NO: 22

This gene is expressed primarily in prostate and osteoclastoma tissues. Preferred polypeptide fragments also comprise the amino acid sequence: MEINNQNCFIVIDLVRTVMENGVEGLLIFGAFLPESWLVGRCSSEPPKALLLIL AHSQKRRLDGWSFIRHLRVHYCVSLTIHFS (SEQ ID NO:468). Also preferred are polynucleotide sequences encoding this polypeptide fragment.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, bone and prostate diseases, and cancers, particularly of the bone and prostate. Similarly, polypeptides and antibodies directed to these polypeptides are

useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the bone and prostate systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded
5 tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 255 as residues: Met-1 to Ser-11.

10 The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment for bone and prostate disorders, especially cancers of those systems.

FEATURES OF PROTEIN ENCODED BY GENE NO: 23

15 This gene shares sequence homology with the FK506-binding protein (FKBP-13) family, a known cytosolic receptor for the immunosuppressants. Recently, another group has cloned a very similar gene, recognizing the homology to FK506-binding protein family, calling their gene FKBP23. (See Accession No. 2827255.)

This gene is expressed primarily in lymphoid tissues.

20 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample, especially for those susceptible to immune suppressant therapies and for diagnosis of diseases and conditions, which include, but are not limited to, immune suppressant disorders. Similarly, polypeptides and antibodies directed to these
25 polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or
30 another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 256 as residues: Ala-19 to Val-31, Arg-38 to Gly-49, Ala-61 to Lys-66, Tyr-68 to Pro-78, Gly-116 to Ala-121, Asp-154 to
35 Ser-162, Glu-173 to Gln-186, Phe-194 to Gly-203, Pro-207 to Val-212.

The tissue distribution and homology to FKBP-12 and -13 indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment for immune suppressant disorders.

5 FEATURES OF PROTEIN ENCODED BY GENE NO: 24

This gene is expressed primarily in the brain and in the retina. This gene maps to chromosome 8, and therefore can be used in linkage analysis as a marker for chromosome 8.

Therefore, polynucleotides and polypeptides of the invention are useful as
10 reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, neurological and ocular associated disease states. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of
15 disorders of the above tissues or cells, particularly of the disorders of the central nervous system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard
20 gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 257 as residues: Cys-34 to Asp-40.

The tissue distribution in retina indicates that polynucleotides and polypeptides corresponding to this gene are useful for the treatment and/or detection of eye disorders
25 including blindness, color blindness, impaired vision, short and long sightedness, retinitis pigmentosa, retinitis proliferans, and retinoblastoma. Expression in the brain indicates a role in the is useful for the detection/treatment of neurodegenerative disease states and behavioral disorders such as Alzheimer's Disease, Parkinson's Disease, Huntington's Disease, schizophrenia, mania, dementia, paranoia, obsessive compulsive
30 disorder and panic disorder.

FEATURES OF PROTEIN ENCODED BY GENE NO: 25

This gene shows sequence homology to a newly identified class of proteins expressed in the nervous system, called stathmin family. (See Accession No. 2585991;
35 see also Eur. J. Biochem. 248 (3), 794-806 (1997).) The stathmin family appears to be an ubiquitous phosphoprotein involved as a relay integrating various intracellular signaling pathways. These pathways affect cell proliferation and differentiation.

Preferred polypeptide fragments comprise the amino acid sequence:

QDKHAEVVRKNKELKEEASR (SEQ ID NO:469); QQDLSPWAAPVGCPLXXASX
TCHXLPLSGCLRRQSXSLPVVAXLCFWFSCPLASLFVPGQPCVTCFPFSLPFQD
KHAEVVRKNKELKEEASR (SEQ ID NO:470). Also preferred are the

5 polynucleotide fragments encoding these polypeptide fragments.

This gene is expressed primarily in brain.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, neurological disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the central nervous system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for the detection/treatment of neurodegenerative disease states and behavioral disorders such as Alzheimer's Disease, Parkinson's Disease, Huntingtons Disease, schizophrenia, mania, dementia, paranoia, obsessive compulsive disorder and panic disorder.

25 **FEATURES OF PROTEIN ENCODED BY GENE NO: 26**

The polynucleotide sequence of this gene contains a domain similar to a Flt3 ligand peptide. Preferred polypeptide fragments comprise the amino acid sequence: PTRCCTTQPCRSSARRPCWVPMVPSPEGREXQPTCPS (SEQ ID NO:471). Thus, this gene may have activity as binding to Flt3 receptors, a process known to promote angiogenesis and/or lymphangiogenesis.

This gene is expressed in human tonsil, and to a lesser extent in teratocarcinoma, placenta, colon carcinoma, and fetal kidney.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, diseases of the tonsil, as well as cancers, such as colon, reproductive, and kidney cancers. Similarly, polypeptides and antibodies directed to these polypeptides are useful

in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the tonsils, colon, reproductive organs, and kidneys, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 259 as residues: Pro-22 to Glu-33.

The tissue distribution in tonsil and several cancers and fetal tissues indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of diseases of the tonsil or colon, such as tonsillitis, inflammatory diseases involving nose and paranasal sinuses, especially during the infection of influenza, adenoviruses, parainfluenza, rhinoviruses. The gene may also be useful in the diagnosis and treatment of neoplasms of nasopharynx or colon origins.

FEATURES OF PROTEIN ENCODED BY GENE NO: 27

In an alternative reading frame exists a large open reading frame that encodes a preferred polypeptide. Preferred polypeptide fragments comprise the amino acid sequence:

MKRSLNENSARSTAGCLPVPLFNQKKRNRQPLTSNPLKDDSGISTPSDNYDFP
 PLPTDWAWEAVNPEXAPVMKTVDTGQIPHSVSRPLRSQDSVFNSIQSNTGRSQ
 GGWSYRDGNKNTSLKTWXKNDFKPQCKRTNLVANDGKNSCPMSSGAQQQK
 QLRTPEPPNLSRNKETELLRQTHSSKISGCTMRGLDKNSALQTLKPNFQQNQY
 KXQMLDDIPEDNTLKETS LYQLQFKEKASSLR IISAVIESMKYWREHAQKTVLL
 FEVLAVLDSAVTPGPYYSKTFLMRDGNKNTLPCVFYEIDRELRLIRGRVHRCVG
 NYDQKKNIFQCVSVRPASVSEQKTFQAFVKIADVEMQYYINVMNET (SEQ ID
 NO:472); SQDSVFNSIQSNTGRSQGGWSYRDGNKNTSLKTWXKNDFKPQCKR
 (SEQ ID NO:473); NKETELLRQTHSSKISGCTMRGLDKNSALQTLKPNF (SEQ ID
 NO:474); SSLRIISAVIESMKYWREHAQKTVLLFEVLAVLDSAVTPGPYYSKTFLM
 (SEQ ID NO:475); and PRLIRGRVHRCVGN YDQKKNIFQCVSVRPASVSEQK
 FQAFV (SEQ ID NO:476).

This gene is expressed primarily in human testes.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are

not limited to, male reproductive disorders, including cancer. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the male reproductive system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful as a hormone with reproductive or other systemic functions; contraceptive development; male infertility of testicular causes, such as Klinefelter's syndrome, varicocele, orchitis; male sexual dysfunctions; testicular neoplasms; and inflammatory disorders such as epididymitis.

FEATURES OF PROTEIN ENCODED BY GENE NO: 28

This gene is expressed primarily in apoptotic T-cell.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, diseases relating to T cells, as well as cancer in general. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the disorders of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for immune disorders. Moreover, since the gene was isolated from an apoptotic cell and based on the understanding of the relationship of apoptosis and cancer, it is likely that this gene may play a role in the genesis of cancer.

FEATURES OF PROTEIN ENCODED BY GENE NO: 29

This gene is expressed primarily in human tonsils.

Therefore, polynucleotides and polypeptides of the invention are useful as
 5 reagents for differential identification of the tissue(s) or cell type(s) present in a
 biological sample and for diagnosis of diseases and conditions, which include, but are
 not limited to, gastrointestinal disorders. Similarly, polypeptides and antibodies directed
 to these polypeptides are useful in providing immunological probes for differential
 identification of the tissue(s) or cell type(s). For a number of disorders of the above
 10 tissues or cells, particularly of the gastrointestinal system, expression of this gene at
 significantly higher or lower levels may be routinely detected in certain tissues (e.g.,
 cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial
 fluid or spinal fluid) or another tissue or cell sample taken from an individual having
 such a disorder, relative to the standard gene expression level, i.e., the expression level
 15 in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides
 corresponding to this gene are useful for the diagnosis and treatment of gastrointestinal
 diseases.

20 FEATURES OF PROTEIN ENCODED BY GENE NO: 30

The translation product of this gene shares sequence homology with C44C1.2
 gene product of *Caenorhabditis elegans* with unknown function. Preferred polypeptide
 fragments comprise the amino acid sequence:

GVFRPCVCGRPASLTCSPLDPEVGPYCDTPTMRTLNFLLWLALACSPVHTTLSK
 25 SDAKKAASKTLLEKSQFSDKPVQDRGLVVTDLKAESVVLEHRSYCSAKARDRH
 FAGDVLGYVTPWNSHGYDVTKVFGSKFTQISPVWLQLKRRGREMFVETGLHD
 VDQGWMRAVRKHAKGLHIVPRLLFEDWTYDDFRNVLDSEDEIEELSKTVVQVA
 KNQHFDGFFVEVWNQLLSQKRVGLIHMLTHLAEALHQARLLALLVIPPAITPGT
 DQLGMFTHKEFEQLAPVLDGFSLMTYDYSTAHPGPNAPLSWVRACVQVLDP
 30 KXKWRTKSSWGSTSMXWTRXPXDARXPVVGXRXIXLKDHXPRMVLDISK
 PQ (SEQ ID NO:477); TCSPLDPEVGPYCDTPTMRTLNFLLWLALACSPVHTTLS
 (SEQ ID NO:478); LVVTDLKAESVVLEHRSYCSAKARDRH FAGDVLGYVTPW
 NSHGYDVTKVFGSKF (SEQ ID NO:479); REMFEVTGLHDVDQGWMRAVRK
 HAKGLHIVPRLLFEDWTYDDFRNVLDSEDE (SEQ ID NO:480); HFDGFFVEVW
 35 NQLLSQKRVGLIHMLTHLAEALHQARLLALLVIPPAITPGTDQLGM (SEQ ID
 NO:481); DGFSLMTYDYSTAHPGPNAPLSWVRACVQVLDPKXKWRTKSSW
 GST (SEQ ID NO:482). Also preferred are polynucleotide fragments encoding these

polypeptide fragments. This gene maps to human chromosome 11, and therefore is useful in linkage analysis as a marker for chromosome 11.

This gene is expressed primarily in human T cells and to a lesser extent in human colon carcinoma.

5 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, immune disorders and cancer. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for
10 differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune and gastrointestinal systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from
15 an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 263 as residues: Leu-21 to Ala-30, Ser-38 to Asp-47, Pro-87 to Asp-94, Leu-197 to Thr-204, Pro-256 to Ser-262, Thr-277 to Arg-282, Thr-293 to Trp-303.

20 The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for the diagnosis and treatment of immune disorders and gastrointestinal diseases.

FEATURES OF PROTEIN ENCODED BY GENE NO: 31

25 The translation product of this gene shares sequence homology with Ribosomal protein L11 of *Caenorhabditis elegans*. (See Accession No. 156201.) Preferred polypeptide fragments comprise the amino acid sequence:

ERGVSINQFCKEFNERTKDIKEGIPLPTKILVKPDRTFEIKIGQPTVSYFLKAAAG
IEKGARQTGKEVAGLVTLKHVYEIARIKAQDEAFALQDVPLSSVVRISIIGSARSL
30 GIRVVKDLSSEELAAF QKERAIFLAAQKEADLAAQEEAAKK (SEQ ID NO:483).

Also preferred are polynucleotide fragments encoding these polypeptide fragments.

This gene is expressed in human embryo tissue and to a lesser extent in human epithelioid sarcoma and other tissues.

35 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, development disorders and epithelial cell cancer. Similarly, polypeptides and antibodies

directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the embryonic and epithelial cell systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 264 as residues: Lys-34 to Gly-40.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for the diagnosis and treatment of developmental disorders and epithelial cancer.

15 **FEATURES OF PROTEIN ENCODED BY GENE NO: 32**

This gene is expressed primarily in resting T cells.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, inflammatory and general immune disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for the diagnosis and treatment of disorders of immune system.

FEATURES OF PROTEIN ENCODED BY GENE NO: 33

This gene is believed to reside on chromosome 1. Accordingly, polynucleotides derived from this gene are useful in linkage analysis as chromosome 1 markers.

This gene is expressed primarily in prostate and to a lesser extent in soares adult brain, human umbilical vein endothelial cells, and amniotic cells.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, prostate-related disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the urinary system and nervous system expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that the protein products of this gene are useful for the diagnosis and treatment of disorders of the urinary and nervous systems.

FEATURES OF PROTEIN ENCODED BY GENE NO: 34

This gene shares sequence homology with R05G6.4 gene product. (See Accession No. gi11326338.) This gene also shares sequence homology with the cyclophilin-like protein CyP-60. (See Accession No. 1199598, see also Biochem. J. 314 (1), 313-319 (1996).) Preferred polypeptide fragments comprise the amino acid sequence:
 AVYTYHEKKKDTAASGYGTQNI RLSRDAVKDFDCCCLSLQPCHDPVVTPDGYL
 YERE AILEYILHQKKEIARQMKA YEKQRGTRREEQKELQRAASQDHVRGFLEKE
 SAIVSRP LNPFTAKALSGTSPDDVQPGPSVGPPSKDKDKVLPSFWIPSLTPEAK
 ATKLEKPSRTVTCMSGKPLRMSDLTPVHFTPLDSSVDRVGLITRSEYVCAVT
 RDSLSNATPCAVLRPSGAVVTLECEVEKLIRKDMVDPVTGDKLTDRDIIVLQRGT
 (SEQ ID NO:484); YLYERE AILEYILHQKKEIARQMKA YEKQRGTRREEQKELQ
 RAASQDHVRGFLE (SEQ ID NO:485); and FTAKALSGTSPDDVQPGPSVGPP
 SKDKDKVLPSFWIPSLTPEAKATKLEKPSRTVTCMSGKPL (SEQ ID NO:486).
 Also preferred are polynucleotide fragments that encode these polypeptide fragments.

This gene is expressed primarily in human testis and to a lesser extent in other tissues.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, male reproductive disorders and in particular testicular cancer. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing

immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system. Expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of disorders of the male reproductive system and in particular of testicular cancer.

FEATURES OF PROTEIN ENCODED BY GENE NO: 35

The translation product of this gene shares sequence homology with Lpe5p of *Saccharomyces cerevisiae* which is thought to be important in the metabolism of phospholipids.

This gene is expressed primarily in liver and brain.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, metabolic disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the metabolic and nervous systems expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 268 as residues: Pro-14 to Leu-20, Lys-28 to Asn-38, Arg-109 to Arg-114, Lys-119 to Asn-124, Glu-152 to Leu-157, Pro-172 to Val-180.

The tissue distribution and homology to Lpe5p of *Saccharomyces cerevisiae* indicates that polynucleotides and polypeptides corresponding to this gene are useful for the diagnosis and treatment of metabolic and nervous disorders.

FEATURES OF PROTEIN ENCODED BY GENE NO: 36

This gene shares sequence homology with the nuclear ribonucleoprotein U (HNRNP U), encoded by *C. elegans* (See Accession gil1703576.) Preferred polypeptide fragments comprise the amino acid sequence:

- 5 MDTSENRPENDVPEPPMPIADQVSNDDRPEGSVEDEEKKESSLPKSFKRKISVV
SATKGVPAAGNSDTEGGQPGRKRRWGASTATTQKKPSISITTESLKSLLIPDIKPL
AGQEAVVDLHADDSETERNGDDGTHDKGLKICRTVTQVVPVPAEGQENGQ
REEEEEKEPEAEPPVPPQVSVEVALPPPAEHEVKKVTLGDTLTRRSISQKSGV
SITIDDPVRTAQVPSPPRGKISNIVHISNLVRPFTLGQLKELLGRTGTLVEEAFWI
10 DKIKSHCFVTYSTVEEAVATRTALHGVKWPQSNPKFLCADYAEQDELDYHRGL
LVDRPSETKTEEQGIPRPLHPPPPPPVQPPQHPRAEQREQERAVREQWAERERE
MERRERTRSEREWDKVRGPRSRSRXRRRKERAKSKEKKSEKKEKAQE
EPPAKLLDDLFRKTKAAPCIYWLPLTDSQIVQKEAERAERAKEREKRRKEQEEE
EQKEREKEAERERNRQLEREKRREHSRERDRERERERERDRGDRDRDRERDRE
15 RGRERDRRDTKRHSRSRSRSTPVRDRGGR (SEQ ID NO:488). Also preferred are
the polynucleotide fragments encoding this polypeptide fragments.

This gene is expressed primarily in epididymus.

- Therefore, polynucleotides and polypeptides of the invention are useful as
reagents for differential identification of the tissue(s) or cell type(s) present in a
20 biological sample and for diagnosis of diseases and conditions, which include, but are
not limited to, diseases of the male reproductive system. Similarly, polypeptides and
antibodies directed to these polypeptides are useful in providing immunological probes
for differential identification of the tissue(s) or cell type(s). For a number of disorders
of the above tissues or cells, particularly of the male reproductive system, expression of
25 this gene at significantly higher or lower levels may be routinely detected in certain
tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma,
urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an
individual having such a disorder, relative to the standard gene expression level, i.e.,
the expression level in healthy tissue or bodily fluid from an individual not having the
30 disorder.

The tissue distribution indicates that polynucleotides and polypeptides
corresponding to this gene are useful for the diagnosis and treatment of male
reproductive disorders.

35 FEATURES OF PROTEIN ENCODED BY GENE NO: 37

This gene is expressed primarily in amygdala.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, inflammatory diseases and reproductive disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the amygdala, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of inflammatory diseases and reproductive disorders.

FEATURES OF PROTEIN ENCODED BY GENE NO: 38

This gene shares sequence homology with human opsonin protein P35 fragment. (See Accession No. R94181.) The opsonin protein activates the phagocytosis of pathogenic microbes by phagocytic cells. Preferred polypeptide fragments comprise the amino acid sequence: GCDSCPPHLPREAFAQDTQAEGECSSRAERADMCPDAP PSQEVPEGPGAAP (SEQ ID NO:489). Also preferred are polynucleotide fragments encoding these polypeptide fragments.

This gene is expressed in immune-related tissues such as thymus, macrophage, T cells and to a lesser extent in many other tissues.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, immune disorders and infectious disease. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system and infectious disease, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e.,

the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 271 as residues: Lys-9 to Arg-14, Met-38 to Asp-51.

The tissue distribution indicates that polynucleotides and polypeptides
 5 corresponding to this gene are useful for diagnosis and treatment of immune disorders, as well as the treatment and/or diagnosis of infectious disease.

FEATURES OF PROTEIN ENCODED BY GENE NO: 39

The translation product of this gene shares sequence homology with alpha-2
 10 type I collagen which is thought to be important in tissue repair. (See, e.g., 211607.) Preferred polypeptide fragments comprise the amino acid sequence: PQLPSCGRPWP
 PGTASVFQSHTQGPREDPDP
 CRAQGSAGTHCPISLSPPRQ (SEQ ID NO:490). Also preferred are the polynucleotide sequences encoding these polypeptide sequences.

This gene is expressed primarily in the brain and to a lesser extent in the kidney
 15 and thymus

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, brain, kidney, and immune disorders. Similarly, polypeptides and
 20 antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the brain, kidney, and immune disorders, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum,
 25 plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to alpha-2 type I collagen indicates that
 30 polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of tissue repair, and brain, kidney, immune disorders.

FEATURES OF PROTEIN ENCODED BY GENE NO: 40

The translation product of this gene shares sequence homology with mini-
 35 collagen which is thought to be important in tissue repair tumor metastasis. (See Accession No. gnllPID1006976.) Preferred polypeptide fragments comprise the amino acid sequence: PGFRGPSGLGCSFFPRSLGRVLPPGCQRPGAHAD

SSPPPTP (SEQ ID NO:491). Also preferred are polynucleotides encoding this polypeptide fragment.

This gene is expressed in ovarian cancer and to a lesser extent in dendritic cells and smooth muscle.

5 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, tumor metastasis and tissue repair. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes
10 for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the tumor metastasis and tissue repair, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from
15 an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 273 as residues: Asn-2 to His-11.

20 The tissue distribution and homology to mini-collagen gene indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of tumor metastasis and tissue repair.

FEATURES OF PROTEIN ENCODED BY GENE NO: 41

This gene shares sequence homology with the HIV TAT protein. (See
25 Accession No. 328416.) Preferred polypeptide fragments comprise the amino acid sequence: EDLKKPDPAASLRAASCGEGKKRKACKNCTCGLAEELEKEK SREQMSSQPKSACGNCYLGDAFRASCPCYLGMPAFKPGKEKVLLS (SEQ ID NO:492); EDLKKPDPAASLRAASCGEGKKRKACKNCTCGLAEELEKEK SREQMSSQPKSACGNCYLGDAFRASCPCYLGMPAFKPGKEKVLLS
30 (SEQ ID NO:493); CGNCYLGDAFRASCPCYLGMPAFKPGKEKVLLS (SEQ ID NO:494); SCGEGKKRKACKNCTCGLAEELEKE (SEQ ID NO:495); SQPKSAC GNCYLGDAFRASC (SEQ ID NO:496); and REAGQNSERQYVS LSRD (SEQ ID NO:497). Also preferred are polynucleotide fragments encoding these polypeptide fragments.

35 This gene is expressed primarily in the infant brain and to a lesser extent in the breast and testes.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, brain, testes and breast disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the brain, testes and breast disorders, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 274 as residues: Pro-7 to Val-15.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of brain, testes and breast, and other related disorders.

FEATURES OF PROTEIN ENCODED BY GENE NO: 42

This gene is expressed primarily in the infant brain, human cerebellum, and to a lesser extent in medulloblastoma.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, brain related disorders and medulloblastoma and other brain cancers. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the brain related disorders and brain cancers, including medulloblastoma, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 275 as residues: Thr-41 to Glu-47.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of human brain related disorders, brain cancers, and medulloblastoma.

5 FEATURES OF PROTEIN ENCODED BY GENE NO: 43

The translation product of this gene shares sequence homology with a phosphotyrosine-independent ligand for the lck SH2 domain which is thought to be important in signal transduction related to phosphotyrosine-independent ligand for the lck SH2 domain. (See Accession No. gil1184951.) Preferred polypeptide fragments
 10 comprise the amino acid sequence: ESSGQARTLADPGPGWPRQQGMCFGSLT
 GLSTTPHGFLT VSAEADPRLIESLSQMLSMGFSDEGGWLTRLLQTKNYDIGAAL
 DTIQYSKH (SEQ ID NO:498). Also preferred are polynucleotide fragments encoding this polypeptide fragment. It is likely that this gene is a new member of a family of
 phosphotyrosine-independent ligands for the lck SH2 domains.

15 This gene is expressed primarily in the placenta and to a lesser extent in endothelial cells and neutrophil.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are
 20 not limited to, reproductive, cardiovascular, immune, and infectious diseases. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the cardiovascular, reproductive, and immune system, and infectious diseases, expression
 25 of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the
 30 disorder.

The tissue distribution and homology to a phosphotyrosine-independent ligand for the lck SH2 domain indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of cardiovascular, reproductive, and immune system diseases, as well as infectious diseases.

FEATURES OF PROTEIN ENCODED BY GENE NO: 44

This gene is expressed primarily in the fetal brain, cerebellum and to a lesser extent in the placenta.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, neuronal cell related disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the neuronal cell related disorders, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 277 as residues: Thr-20 to Gly-28.

The tissue distribution and homology to proline-rich protein genes indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of neuronal cell related disorders.

FEATURES OF PROTEIN ENCODED BY GENE NO: 45

The translation product of this gene shares sequence homology with precerebellin of human, which is thought to be important in synaptic physiology. (See Accession No. gil180251.) It has been observed that cerebellin-like immunoreactivity is associated with Purkinje cell postsynaptic structures. Thus, it is likely that this gene also have synaptic activity. Preferred polypeptide fragments comprise the amino acid sequence: QEGSEPVLLERGECLVVCEPGRAAAGGPGGAALGEAPPGRVAFXAV RSHHHEPAGETGNGTSGAIYFDQVLVNEGGGFDRASGSFVAPVRGVYSFRFH VVKVYNRQTVQVSLMLNTWPVISAFANDPDVTREAAATSSVLLPLDPGDRVSLR LRRGXSTGW (SEQ ID NO:499). Also preferred are polynucleotide fragments encoding these polypeptide fragments.

This gene is expressed primarily in cerebellum and infant brain. By Northern analysis, a single transcript of 2.4 kb was observed in brain tissues.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are

not limited to, neuronal cell signal transduction and synaptic physiology. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the neuronal cell signal transduction and synaptic physiology expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to gene or gene family indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of neuronal cell related disorders.

15 **FEATURES OF PROTEIN ENCODED BY GENE NO: 46**

This gene is expressed in fetal liver and spleen, and to a lesser extent in bone marrow, umbilical vein, and T cells.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, disorders of the immune system, particularly hematopoiesis. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the hematopoiesis and immune disorders, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 279 as residues: Asp-30 to Glu-57.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of hematopoietic and immune disorders.

FEATURES OF PROTEIN ENCODED BY GENE NO: 47

The translation product of this gene shares sequence homology with a 12 kD nucleic acid binding protein of Feline calicivirus which is thought to be important in viral replication. (See Accession No. 59264)

- 5 This gene is expressed primarily in human cardiomyopathy and to a lesser extent in T helper cells, fetal brain and synovial sarcoma.

- 10 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, cardiomyopathy as well as viral infection. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the cardiovascular system, expression of this gene at significantly higher or lower levels may be routinely detected in certain
- 15 tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID
- 20 NO: 280 as residues: Trp-20 to Cys-26.

- The tissue distribution in cardiomyopathy and homology to viral 12 kD nucleic acid binding protein indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and intervention of cardiomyopathy, including those caused by ischemic, hypertensive, congenital, valvular, or pericardial abnormalities.
- 25 The gene expression pattern may be the consequence or the cause for these conditions.

FEATURES OF PROTEIN ENCODED BY GENE NO: 48

- The translation product of this gene shares sequence homology with tumor necrosis factor related gene product which is thought to be important in tumor necrosis,
- 30 bacterial and viral infection, immune diseases and immunoreactions.

 This gene is expressed primarily in colon and to a lesser extent in ovarian and breast cancers.

- Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a
- 35 biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, tumors of colon, ovary or breast origins. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes

for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the colon, ovary and breast, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to Tumor necrosis factors indicates that polynucleotides and polypeptides corresponding to this gene are useful for intervention of cancers of colon, ovary and breast origins, because TNF family members are known to be involved in the tumor development.

FEATURES OF PROTEIN ENCODED BY GENE NO: 49

The translation product of this gene shares sequence homology with mucins, such as epithelial mucin, which is thought to be important in extracellular matrix functions such as protection, lubrication and cell adhesion (See for example Accession No. R68002). Preferred polypeptide fragments comprise the following amino acid sequence: PRSRPALRPGRQRPPSHSATSGVLRPRKKPDP (SEQ ID NO:500).

Also preferred are polynucleotide fragments encoding these polypeptide fragments. Moreover, this gene maps to chromosome 22q11.2-qter, and therefore, can be used as a marker in linkage analysis for chromosome 22.

This gene is expressed primarily in corpus colosum.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, tumors, especially of corpus colosum, as well as metastatic lesions. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the corpus colosum and other solid tissues, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to mucins indicates that polynucleotides and polypeptides corresponding to this gene are useful for serum tumor markers or immunotherapy targets because tumor cells have greatly elevated level of mucin expression and shed the molecules into the epithelial tissues.

5

FEATURES OF PROTEIN ENCODED BY GENE NO: 50

This gene is expressed primarily in CD34 depleted buffy coat cord blood and primary dendritic cells.

Therefore, polynucleotides and polypeptides of the invention are useful as
10 reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, hematopoietic disorders and immunological disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For
15 a number of disorders of the above tissues or cells, particularly of the hematopoietic and immune systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard
20 gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution in CD34 depleted buffy coat cord blood and primary dendritic cells indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of hematopoietic and immune disorders.
25 Secreted or cell surface proteins in the above tissue distribution often are involved in cell activation (e.g. cytokines) or molecules involved in cell surface activation.

FEATURES OF PROTEIN ENCODED BY GENE NO: 51

The translation product of this gene shares sequence homology with Interferon
30 induced 1-8 gene encoded polypeptide which is thought to be important in binding to retroviral rev responsive element. Preferred polypeptide fragment comprise the following amino acid sequences: MTLITPSXKLTFXKGNKSWSSRACSSSTLVDP (SEQ ID NO:501). Also preferred are polynucleotide fragments encoding these polypeptide fragments.

35 This gene is expressed primarily in CD34 positive cells and neutrophils.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a

biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, retroviral infection, such as AIDS, and other immune disorders.

Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 284 as residues: Gln-51 to Trp-62.

The tissue distribution and homology to interferon induced gene 1-8 indicates that polynucleotides and polypeptides corresponding to this gene are useful for intervention of retroviral infection including HIV. The factor may be involved in viral stability or viral entry into the cells. Alternatively, the virus/factor complex may elicit the cellular immune reaction.

FEATURES OF PROTEIN ENCODED BY GENE NO: 52

This gene shares sequence homology to immunoglobulin lambda chain (See Accession No. 2865484). Therefore it is likely that this gene has activity similar to an immunoglobulin lambda chain. Preferred polypeptide fragments comprise the following amino acid sequence: GHPSPALSIAPSDGSQPCDEVVPYGEAHVTRYCKKPLTNS HLETEAQSSSL (SEQ ID NO:502). Also preferred are polynucleotide fragments encoding these polypeptide fragments.

This gene is expressed primarily in Hodgkin's lymphoma.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, Hodgkin's lymphoma and other immune disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e.,

the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 285 as residues: Pro-27 to Thr-32.

The tissue distribution in Hodgkin's lymphoma and the sequence homology
5 indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis of Hodgkin's lymphoma, since the elevated expression and secretion by the tumor mass may be indicative of tumors of this type. Additionally the gene product may be used as a target in the immunotherapy of the cancer. Because the gene is expressed in cells of lymphoid origin, the natural gene product may be involved in immune
10 functions. Therefore it may be also used as an agent for immunological disorders including arthritis, asthma, immune deficiency diseases such as AIDS, and leukemia.

FEATURES OF PROTEIN ENCODED BY GENE NO: 53

This gene has extensive homology to cDNA for Homo sapiens mRNA for the
15 ISLR gene(See Accession No. AB003184). This protein is considered to be a new member of the Ig superfamily and contains a leucine-rich repeat (LRR) with conserved flanking sequences and a C2-type immunoglobulin (Ig)-like domain. These domains are important for protein-protein interaction or cell adhesion, and therefore it is possible that the novel protein ISLR may also interact with other proteins or cells. The ISLR gene
20 was mapped on human chromosome 15q23-q24 by fluorescence in situ hybridization (See Medline Article No. 97468140). Homology to the ISLR gene has been confirmed by another independent group as well (See Accession No. Hs.102171)

This gene is expressed in a number of tissues including human retina, heart, skeletal muscle, prostate, ovary, small intestine, thyroid, adrenal cortex, testis,
25 stomach, spinal cord, fetal lung and fetal kidney tissues, colon, tonsil and stomach cancer, and to a lesser extent in endometrial stromal cells treated with estradiol, breast tissue, synovium, lymphoma, and number of other tumors.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a
30 biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, tumors of colon, ovary and breast origins. However, due to the wide range of expression in various tissues, protein may play a vital role in the development of cancer in other tissues as well, not just those mentioned above. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing
35 immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the colon, ovary and breast, expression of this gene at significantly higher or lower levels may be routinely

detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Additionally, this gene maps to chromosome 15q23-q24, and therefore, can be used as a marker in linkage analysis for chromosome 15.

The tissue distribution in tumors of colon, ovary, and breast origins indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and intervention of these tumors, in addition to other tumors where expression has been indicated. Protein, as well as, antibodies directed against the protein may show utility as a tumor marker and/or immunotherapy targets for the above listed tumors and tissues.

FEATURES OF PROTEIN ENCODED BY GENE NO: 54

Gene has homology to multidrug resistance gene 1 (See Accession No. P06795). Preferred polynucleotide fragments comprise the following sequence:
 GCTTCGTGTCCAACCCTCTTGCCCTTCGCCTGTGTGCCTGGAGCCAGTCCCA
 CCACGCTCGCGTTTCCTCCTGTAGTGCTCACAGGTCCCAGCACCGATGGCA
 TTCCCTTTGCCCTGAGTCTGCAGCGGGTCCCTTTTGTGCTTCCTTCCCCTCA
 GG TAGCCTCTCTCCCCCTGGGCCACTCCCGGGGGTGAGGGGGTTACCCCTT
 CCCAGTGTTTTTTATTCCTGTGGGGCTCACCCCAAAGTATTAAAAGTAGCTTT
 GTAA (SEQ ID NO:503). Also preferred are polypeptide fragments encoded by these polynucleotide fragments.

This gene is expressed primarily in lung, esophagus, leukemia (Jurkat cells) and breast cancers and to a lesser extent in macrophages treated with GM-CSF fetal tissues and wide range of tissues.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions which include, but are not limited to, cancer of wide range of origins. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the solid tumors, lung and leukemia, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e.,

the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Furthermore, due to the high expression level in lung tissue and the proposed function of the multidrug resistance protein 1 gene as the efflux pump responsible for low-drug accumulation in multidrug-resistant cells, protein as well mutants thereof, may also be beneficial as a target for gene therapy, particularly for the chronic patient. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 287 as residues: Met-1 to Lys-16.

The tissue distribution in wide range of cancers and fetal tissues indicates that polynucleotides and polypeptides corresponding to this gene are useful for detection of cells in active proliferation, such as cancers. The gene products may be used for cancer markers or immunotherapy target.

FEATURES OF PROTEIN ENCODED BY GENE NO: 55

This gene maps to the X chromosome.

This gene is expressed primarily in the brain and to a lesser extent in the developing embryo.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, neurodegenerative disease states and developmental disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders, including sex-linked disorders, of the above tissues or cells, particularly of the neurological, developmental systems, and cardiovascular system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Moreover, this gene maps to the X chromosome, and therefore, may be used as a marker in linkage analysis for this chromosome.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for the detection/treatment of neurodegenerative disease states and behavioral disorders such as Alzheimer's Disease, Parkinson's Disease, Huntington's Disease, Klinefelter's, schizophrenia, mania, dementia, paranoia, obsessive compulsive disorder and panic disorder. In addition, the gene or gene product may also play a role in the treatment and/or detection of developmental

disorders associated with the developing embryo, sexually-linked disorders, or disorders of the cardiovascular system.

FEATURES OF PROTEIN ENCODED BY GENE NO: 56

- 5 The translation product of this gene shares sequence homology with paxillin which is thought to be important in mediating signal transduction from growth factor receptors to the cytoskeleton. Preferred polynucleotide fragments comprise the following sequence: TGGCTCACTGTCTTACAATCACTGCTGTGGAATCATGA TACCACTTTTAGCTCTTTGCATCTTCCTTCAGTGTATTTTGTTTTCAAGAGG
- 10 AAGTAGATTTTAACTGGACAACCTTGAGTACTGACATCATTGATAAAATAAACT GGCTTGTGGTTTCAA (SEQ ID NO:506). Also preferred are polypeptide fragments encoded by these polynucleotide fragments. More preferably, polypeptide fragments comprise the amino acid sequence: LDELM AHLTEMQAKVAVRAD
- 15 AGKKHLPDKQDHKASLDSMLGGLEQELQDLGIATVPKGHCASCQKPIAGKVI HALGQSWHPEHFVCTHCKEEIGSSPFFERSGLXYCPNDYHQLFSPRCAYCAAP ILDKVLTAMNQTWHPHFCSHCGEVFGEAEGFHEKDKKPYCRKDFLAMFSPK CGGCNRPVLENYLSAMDTVWHPECFVCGDCFTSFSTGSFFELDGRPFCELYH HRRGTLCHGCGQPITGRCISAMGYKFHPEHFVCAFLTQLSKGIFREQNDKTY CQPCFNKLF (SEQ ID NO:507); KASLDSMLGGLEQELQDLGIATVPKGHC
- 20 ASCQKPIAGKVIHAL (SEQ ID NO:508); CPNDYHQLFSPRCAYCAAPILDKVL TAMNQTWHPHFCSHCGEVFGEAEG (SEQ ID NO:509); DKKPYCRKDFLAM FSPKCGGCNRPVLENYLSAMDTVWHPECFVCGDCFTSFSTGSFFELDGRPFCE L (SEQ ID NO:510); CGQPITGRCISAMGYKFHPEHFVCAFLTQLSKGIFRE QNDKTYCQ (SEQ ID NO:511). Polynucleotide fragments encoding these preferred
- 25 polypeptide fragments are also contemplated.

This gene is expressed primarily in brain, and to a lesser extent in the developing embryo.

- Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a
- 30 biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, neurological disease states and developmental abnormalities. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune and
- 35 nervous systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or

cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Moreover, since this gene shares homology with a gene that maps to chromosome 11, (See Accession No.T87404), gene as well as its translated product may be used for linkage analysis on chromosome 11.

The tissue distribution and homology to paxillin indicates that polynucleotides and polypeptides corresponding to this gene are useful for the treatment and or detection of disease states associated with abnormal signal transduction in brain and/or the developing embryo. This would include treatment or detection of neurodegenerative disease states and behavioral disorders such as Alzheimer's Disease, Parkinson's Disease, Huntingtons Disease, schizophrenia, mania, dementia, paranoia, obsessive compulsive disorder and panic disorder and also in the treatment and or detection of embryonic development defects.

15 **FEATURES OF PROTEIN ENCODED BY GENE NO: 57**

This gene is expressed primarily in fetal spleen, brain, and to a lesser extent in six week old embryo.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, immune disorders, neurological disorders, and developmental abnormalities. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune and developmental systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 290 as residues: Arg-28 to Gly-34.

The expression of this gene in fetal spleen indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment/detection of immune disorders such as arthritis, asthma, immune deficiency diseases such as AIDS, and leukemia. In addition the expression of this gene in the early embryo, indicates a key role in embryo development and hence the gene or gene product could be used in the treatment and or detection of embryonic development defects. This would include

treatment or detection of neurodegenerative disease states and behavioral disorders such as Alzheimer's Disease, Parkinson's Disease, Huntingtons Disease, schizophrenia, mania, dementia, paranoia, obsessive compulsive disorder and panic disorder and also in the treatment and or detection of embryonic development defects.

5

FEATURES OF PROTEIN ENCODED BY GENE NO: 58

The translation product of this gene shares sequence homology with the gene disrupted in the neurodegenerative disease dentatorubal-pallidoluyian atrophy. Moreover a long open reading fame exists in an alternative frame. Preferred polypeptide fragments

10

comprise the following:

MGSSQSVEIPGGGTEGYHVLRVQENSPGHRAGLEPFFDFIVSINGSRLNKDND
 TLKDLLKXNVEKPKV KMLIYSSKTLELRETSVTPSNLWGGQGLLGVSIRFCSFD
 GANENVWHVLEVESNSPAALAGLRPHSDYIIGADTMNESEDLSLIETHEAKP
 LKLYVYNTD TDNCREVIITPNSAWGGEGLGCGIGYGYLHRIPTRPFEEGKKIS
 15 LPGQMAGTPITPLKDGFTVQLSSVNPPSLSPPGTTGIEQSLTGLSISSTPPAVSS
 VLSTGVPTVPLLPPQVNQSLTSVPPMNPATTLPGLMPLPAGLPNLPNLPNLP
 PHIMPGVGLPELVNPGLPPLPSMPPRNLPGIAPLPSEFLPSFPLVPESSSAASS
 GELLSSLPPTSNA PSDPATTTAKADAASSLTVDVTPPTAKAPTTVEDRVGDSTPV
 SEKPVSAAVDANASESP (SEQ ID NO:512); SVEIPGGGTEGYHVLRVQENSPGH
 20 RAGLEPFFDFIVSINGSRLNKDNDTLKDLLKXNVEKPKV KMLIYSSKTLELRETS
 VTPSNLWGGQGLLGVSIRFCSFDGANENVWH (SEQ ID NO:513); ESNPAA
 LAGLRPHSDYIIGADTMNESEDLSLIETHEAKPLKLYVYNTD TDNCREVIITP
 NSAWGGEGLGCGIGYGYLHRIPTRPFEEGKKISLPGQMAGTPITPLKDGFTV
 QLSSVNPPSLSPPGTTGIEQSLTG LSISS (SEQ ID NO:514); RIPTRPFEEGKKI
 25 SLPGQMAGTPITPLKDGFTVQLSSVNPPSLSPPGTTGIEQSLTGLSISSTPPAVS
 SVLSTGVPTVPLLPPQVNQSLTSVPPMNPATTLPGLMPLPAGLPNLPNLPNLP
 APHIMPGVGLPELVNPGLPPLPSMPPRN (SEQ ID NO:516); PGLPPLPSMPPRN
 LPGIAPLPSEFLPSFPLVPESSSAASSGELLSSLPPTSNA PSDPATTTAKADAA
 SSLTVDVTPPTAKAPTTVEDRVGDSTPVSEKPVSAAVDAN (SEQ ID NO:517).

30

This gene is expressed primarily in prostate cancer, and to a lesser extent in the pineal glands and in fetal lung.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are

35 not limited to, neurological conditions and pulmonary disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For

a number of disorders of the above tissues or cells, particularly of the nervous, pulmonary, and endocrine systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or
5 another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 291 as residues: Asn-9 to Leu-14.

The abundance of this gene in the pineal gland and its homology to a gene
10 disrupted in the neurodegenerative disease state Dentatorubral-pallidoluysian atrophy indicates that this gene may be useful in the treatment and/or detection of other neurodegenerative disease states and behavioral disorders such as Alzheimer's Disease, Parkinson's Disease, Huntingtons Disease, schizophrenia, mania, dementia, paranoia, obsessive compulsive disorder and panic disorder. The abundance of this gene in fetal
15 lung would suggest that misregulation of the expression of this protein product in the adult could lead to lymphoma or sarcoma formation, particularly in the lung; that it may also be involved in predisposition to certain pulmonary defects such as pulmonary edema and embolism, bronchitis and cystic fibrosis; and thus the gene or the gene protein encoded by the gene could be used in the detection and/or treatment of these
20 pulmonary disorders.

FEATURES OF PROTEIN ENCODED BY GENE NO: 59

This gene is expressed primarily in the developing embryo.

Therefore, polynucleotides and polypeptides of the invention are useful as
25 reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, developmental abnormalities. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of
30 the above tissues or cells, particularly of the developmental system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the
35 expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The expression of this gene primarily in the embryo, indicates the gene plays a key role in embryo development and that the gene or the protein encoded by the gene could be used in the treatment and or detection of developmental defects in the embryo or in infants.

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FEATURES OF PROTEIN ENCODED BY GENE NO: 60

This gene displays homology to nestin, an intermediate filament protein, the expression of which correlates with the proliferation of Central Nervous System progenitor cells and that is useful in the identification of brain tumors. This gene maps to chromosome 1, and therefore, may be used as a marker in linkage analysis for chromosome 1 (See Accession No. AA527348).

10

This gene is expressed primarily in kidney and to a lesser extent in brain.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, renal disorders and neurodegenerative conditions. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the excretory and nervous systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 293 as residues: Thr-128 to Asn-135.

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The tissue distribution and homology to nestin indicates that polynucleotides and polypeptides corresponding to this gene are useful for detection and/or treatment of neurodegenerative disease states and behavioral disorders such as Alzheimer's Disease, Parkinson's Disease, Huntingtons Disease, schizophrenia, mania, dementia, paranoia, obsessive compulsive disorder and panic disorder. In addition, its abundance in kidney indicates that it is useful in the treatment and detection of acute renal failure and other disease states associated with the kidney.

FEATURES OF PROTEIN ENCODED BY GENE NO: 61

35

Gene shares homology with the latrophilin-related protein 1 precursor as well as the calcium-independent alpha-latrotoxin receptor. Preferred polypeptide fragments

comprise the following amino acid sequence:

IYKVFRTAGLKPEVSCFENIRSCARXXXXXXXXXXXXXWIFGVLHVHVS
TAYLFTVSNAFQGMFIFLFLCVLSRKIQEEYYRLFKNVPCC (SEQ ID NO:518);
WIFGVLHVHVSVTAYLFTVSNAFQGMFIFLFLCVLSRKIQEEYYRLFKNVPC

- 5 C (SEQ ID NO:519). Also preferred are polynucleotide fragments encoding these polypeptide fragments. (See Accession No. 2213659) The translation product of this gene shares sequence homology with CD 97, a seven transmembrane bound receptor.

This gene is expressed primarily in infant brain and in endothelial cells.

- Therefore, polynucleotides and polypeptides of the invention are useful as
10 reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, neurological disorders and hematopoietic disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For
15 a number of disorders of the above tissues or cells, particularly of the neurological and hematopoietic systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the
20 standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 294 as residues: Lys-13 to Leu-21.

- The tissue distribution of this gene suggest that it may be useful in the detection and/or treatment of neurodegenerative disease states and behavioral disorders such as
25 Alzheimer's Disease, Parkinson's Disease, Huntingtons Disease, schizophrenia, mania, dementia, paranoia, obsessive compulsive disorder and panic disorder, while its expression in hematopoietic cell types indicates that the gene could be important for the treatment or detection of immune or hematopoietic disorders including arthritis, asthma and immunodeficiency diseases.

30

FEATURES OF PROTEIN ENCODED BY GENE NO: 62

This gene is expressed primarily in fetal liver and fetal spleen.

- Therefore, polynucleotides and polypeptides of the invention are useful as
35 reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, hematological and immunological disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes

for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune and hematopoietic systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 295 as residues: Ser-91 to Lys-98.

The tissue distribution of this gene fetal liver and spleen indicates that the gene could be important for the treatment or detection of immune or hematopoietic disorders including arthritis, leukemia, asthma and immunodeficiency diseases.

FEATURES OF PROTEIN ENCODED BY GENE NO: 63

Gene shares homology with human serum amyloid protein. Preferred polypeptide fragments comprise the following amino acid sequence:
ALTRIPPGDWVINVTAVSFAGKTTARFFHSSPPSLGDQARTDPGHQRRD (SEQ ID NO:520) (See Accession No. W13671). Also preferred are polynucleotide fragments encoding these polypeptide fragments This gene maps to chromosome 9, and therefore, may be used as a marker in linkage analysis for chromosome 9 (See Accession No. AA004342).

This gene is expressed primarily in fetal liver and spleen.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, hematopoietic and immune disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the hematopoietic and immune systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution of this gene in fetal liver-spleen indicates that the gene could be important for the treatment or detection of immune or hematopoietic disorders including arthritis, leukemia, asthma, and immunodeficiency diseases.

5 **FEATURES OF PROTEIN ENCODED BY GENE NO: 64**

This gene maps to chromosome 3, and therefore, may be used as a marker in linkage analysis for chromosome 3 (See Accession No. AA219669).

This gene is expressed specifically in the brain.

Therefore, polynucleotides and polypeptides of the invention are useful as
10 reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, neurodegenerative disease states. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of
15 the above tissues or cells, particularly of the neurological systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the
20 expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for the detection/treatment of neurodegenerative disease states and behavioral disorders such as Alzheimer's Disease, Parkinson's
25 Disease, Huntingtons Disease, schizophrenia, mania, dementia, paranoia, obsessive compulsive disorder and panic disorder.

FEATURES OF PROTEIN ENCODED BY GENE NO: 65

Gene shares homology with a yeast protein. Preferred polypeptide fragments
30 comprise the following amino acid sequence: LQEVNITLPENSVWYERYKFDIP VFHL (SEQ ID NO:521). Also preferred are polynucleotide fragments encoding these polypeptide fragments. (See Accession No. 1332638)

This gene is expressed primarily in fetal tissue (fetus and fetal liver).

Therefore, polynucleotides and polypeptides of the invention are useful as
35 reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, liver disorders and cancers (e.g. hepatoblastoma). Similarly,

polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the hepatic system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 298 as residues: Asn-59 to Glu-64.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for the detection and treatment of liver disorders and cancers (e.g. hepatoblastoma, jaundice, hepatitis, liver metabolic diseases and conditions that are attributable to the differentiation of hepatocyte progenitor cells). In addition the expression in fetus would suggest a useful role for the protein product in developmental abnormalities, fetal deficiencies, pre-natal disorders and various wound-healing models and/or tissue trauma.

FEATURES OF PROTEIN ENCODED BY GENE NO: 66

Gene has homology with a B-cell surface antigen which may indicate gene plays a role in the immune response, including, but not limited to disorders and infections of the immune system. Preferred polynucleotide fragments comprise the following sequence: TAGCATGTAGCCAGTCGAATAACNTATAAGGACAAAGTGGAGTC CACGCGTGCGGCCGTCTAGACTAGTGGATCCCCCGGCTGCAGGATTCCGGC ACGAG (SEQ ID NO:523). Also preferred are polypeptide fragments encoded by these polynucleotide fragments (See Accession No.T94535). Additionally, this gene shares homology with an interferon-gamma receptor. Preferred polypeptide fragments also comprise the following amino acid sequence: MQGSGSQFRACLLCLCFSCPC SPGGPRWNSRQGGRFPKTCRAISQNLVFKYKTFCPVRYMQPHRSSLCLHFTS YVFILSTWGLRTYSTDLKKKKKNSRGGPVPIRPKS (SEQ ID NO:522); MQGSGSQFRACLLCLCFSCPCSPGGPRWNSRQGGRFPKTCRAISQNLVFK (SEQ ID NO:524); PVRYMQPHRSSLCLHFTSYVFILSTWGLRTYSTDLKKKKK NSRGGPVPIRPKS (SEQ ID NO:525); and GEEQRDCSLGWRGVGMRATHCQAA RMFVLFSLPKYAGL (SEQ ID NO:526). Also preferred are polynucleotide fragments encoding these polypeptide fragments

This gene is expressed primarily in T-cells and gall bladder.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, immunological disorders and conditions (immunodeficiencies, cancer, leukemia, hematopoiesis). Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune and digestive systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 299 as residues: Thr-41 to Gly-52.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for the treatment and diagnosis of immune disorders including: leukemias, lymphomas, auto-immune disorders, immunosuppressive (transplantation) and immunodeficiencies (e.g. AIDS), inflammation and hematopoietic disorders. The expression of this gene in gall bladder would suggest a possible role for this gene product in digestive disorders, particularly of the pancreas.

FEATURES OF PROTEIN ENCODED BY GENE NO: 67

This gene maps to chromosome 11, and therefore, may be used as a marker in linkage analysis for chromosome 11 (See Accession No. AA011622).

This gene is expressed primarily in a variety of fetal and developmental tissues (e.g. fetal spleen, infant brain).

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, developmental, immune or neurological abnormalities. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the developing immune and central nervous systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or

another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 300 as residues: Ser-38 to Ser-43.

5 The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for developmental abnormalities or fetal deficiencies. The detection in infant brain would suggest a role in neurological disorders (both developmental and neurodegenerative conditions of the brain and nervous system, behavioral disorders, depression, schizophrenia, Alzheimer's disease, Parkinson's
10 disease, Huntington's disease, mania, dementia). In addition, the detection in spleen would similarly suggest a role in detection and treatment of immunologically mediated disorders (e.g. immunodeficiency, inflammation, cancer, wound healing, tissue repair, hematopoiesis).

15 **FEATURES OF PROTEIN ENCODED BY GENE NO: 68**

 This gene is expressed primarily in spleen, T-cells, and fetal heart.

 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are
20 not limited to, immunological deficiencies, including AIDS and cardiovascular disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune and cardiovascular systems, expression of this gene at significantly higher
25 or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

30 The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for the diagnosis and treatment of immune disorders including: leukemias, lymphomas, autoimmune disorders, immunodeficiencies (e.g. AIDS), immuno-suppressive conditions (transplantation) and hematopoietic disorders. The expression in fetal heart indicates that polynucleotides and
35 polypeptides corresponding to this gene are useful for the treatment and diagnosis of cardiovascular disorders (e.g. heart disease, restenosis, atherosclerosis, stroke, angina, thrombosis).

FEATURES OF PROTEIN ENCODED BY GENE NO: 69

Gene shares homology with a human collagen protein. Preferred polypeptide fragments comprise the following amino acid sequence:

- 5 MPRKTSKCRQLLCSGASRNADTAARQSTCSSHRPPGKIPSLGPRRXPGCXSV
SSRGEQSTGSPAAPRCGRRDAHRGLPGGAAMTPGDTWASFNPRAGHSKSQGE
QGESSGASRQDRHPVSHWVERQREAWGAPRSSSAGGVKVAATTEREPEFKIK
TGKA (SEQ ID NO:527); CSGASRNADTAARQSTCSSHRPPGKIPSLGPRRXPG
CXSVSSRGEQSTGSPAAPRCGRRDAHRGLPGGAAMTPGDTWASFNPRAGHS
10 (SEQ ID NO:528); QGEGQESSGASRQDRHPVSHWVERQREAWGAPRSSSAGG
VKVAATTEREPEFKIKTGKA (SEQ ID NO:529) (See Accession No. 124886). Also
preferred are polynucleotide fragments encoding these polypeptide fragments

This gene is expressed primarily in fetal heart.

- Therefore, polynucleotides and polypeptides of the invention are useful as
15 reagents for differential identification of the tissue(s) or cell type(s) present in a
biological sample and for diagnosis of diseases and conditions, which include, but are
not limited to, cardiovascular disorders. Similarly, polypeptides and antibodies directed
to these polypeptides are useful in providing immunological probes for differential
identification of the tissue(s) or cell type(s). For a number of disorders of the above
20 tissues or cells, particularly of the cardiovascular system, expression of this gene at
significantly higher or lower levels may be routinely detected in certain tissues (e.g.,
cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial
fluid or spinal fluid) or another tissue or cell sample taken from an individual having
such a disorder, relative to the standard gene expression level, i.e., the expression level
25 in healthy tissue or bodily fluid from an individual not having the disorder. Preferred
epitopes include those comprising a sequence shown in SEQ ID NO: 302 as residues:
Pro-32 to Ser-39.

- The tissue distribution indicates that polynucleotides and polypeptides
corresponding to this gene are useful for the treatment and diagnosis of cardiovascular
30 disorders (e.g. heart disease, restenosis, atherosclerosis, stroke, angina, thrombosis).

FEATURES OF PROTEIN ENCODED BY GENE NO: 70

- The translation product of this gene shares sequence homology with a chicken
single-strand DNA-binding protein. Preferred polypeptide fragments comprise the
35 following amino acid sequence:
MSPRYPGGPRPLRIPNQALGGVPGSQPLLPSGMDPTRQQGHPNMGGPMQRM
TPPRGMVPLGPQNYGGAMRPLNALGGPGMPGMNMGPGGGRPWPNTNAN

SIPYSSASPGNYVGPPGGGGPPGTPIMPSPADSTNSGDNMYTLMNAVPPGPNR
 PNFPMPGSDGPMGGLGGMESHMHMNGSLGSGDMDISISKNPNNMSLSNQ
 GTPRDDGEMGGNFLNPFQSESYSPSMTMSV (SEQ ID NO:530); MSPRYPGG
 PRPPLRIPNQALGGVPGSQPLLPSGMDPTRQQGHPNMGGPMQRMTPPRGMVP
 5 LGPQNYGGAMRPPLNALGGPGMPGMNMGPGGGRPWPNTNANSIPYSSASP
 GNY (SEQ ID. NO:531); LNALGGPGMPGMNMGPGGGRPWPNTNANSIPYSS
 ASPGNYVGPPGGGGPPGTPIMPSPADSTNSGDNMYTLMNAVPPGPN (SEQ ID
 NO:532); GPMGGLGGMESHMHMNGSLGSGDMDISISKNPNNMSLSNQPGTPR
 DDGEMGGNFLNPFQSESYSPSMTMSV (SEQ ID NO:533); TCEHSSEAKAFHDY
 10 (SEQ ID NO:534). Also preferred are polynucleotide fragments encoding these
 polypeptide fragments. (See Accession No. 1562534)

This gene is expressed primarily in placenta and to a lesser extent in the fetal heart and a variety of other tissues and cell types.

Therefore, polynucleotides and polypeptides of the invention are useful as
 15 reagents for differential identification of the tissue(s) or cell type(s) present in a
 biological sample and for diagnosis of diseases and conditions, which include, but are
 not limited to, developmental abnormalities, fetal deficiencies, and particularly of the
 cardiovascular system. Similarly, polypeptides and antibodies directed to these
 polypeptides are useful in providing immunological probes for differential identification
 20 of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells,
 particularly of the reproductive system, expression of this gene at significantly higher or
 lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded
 tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or
 another tissue or cell sample taken from an individual having such a disorder, relative to
 25 the standard gene expression level, i.e., the expression level in healthy tissue or bodily
 fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides
 corresponding to this gene are useful for the detection and treatment of developmental
 abnormalities or fetal deficiencies, ovarian and other endometrial cancers, reproductive
 30 dysfunction, cardiovascular disorders, and pre-natal disorders.

FEATURES OF PROTEIN ENCODED BY GENE NO: 71

This gene is expressed primarily in fetal liver and to a lesser extent in the breast and testes.

35 Therefore, polynucleotides and polypeptides of the invention are useful as
 reagents for differential identification of the tissue(s) or cell type(s) present in a
 biological sample and for diagnosis of diseases and conditions, which include, but are

not limited to, liver disorders (including hepatoblastomas) and reproductive disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the

5 hepatic and reproductive systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to

10 the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for detection and treatment of liver disorders and cancers (e.g. hepatoblastoma, jaundice, hepatitis, liver metabolic diseases and conditions that are attributable to the differentiation of hepatocyte progenitor cells). The

15 expression in testes and breast indicates that polynucleotides and polypeptides corresponding to this gene are useful for the detection and treatment of endocrine and reproductive disorders (e.g. sperm maturation, milk production, testicular and breast cancers).

20 **FEATURES OF PROTEIN ENCODED BY GENE NO: 72**

This gene maps to chromosome 1, and therefore, may be used as a marker in linkage analysis for chromosome 1 (See Accession No. W93595).

This gene is expressed primarily in smooth muscle and to a lesser extent in brain.

25 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, cardiovascular and neurological disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes

30 for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the cardiovascular and central nervous systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample

35 taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for the detection and treatment of restenosis, atherosclerosis, stroke, angina, thrombosis, wound healing and other conditions of heart disease. In addition, the expression in brain would suggest that polynucleotides and polypeptides corresponding to this gene are useful for the detection and treatment of developmental, degenerative and behavioral conditions of the brain and nervous system (e.g. schizophrenia, depression, Alzheimer's disease, Parkinson's disease, Huntington's disease, mania, dementia, paranoia, addictive behavior and sleep disorders).

FEATURES OF PROTEIN ENCODED BY GENE NO: 73

Gene shares homology with human stromalin-2. Preferred polypeptide fragments comprise the following amino acid sequence:

QAFVLLSLLLLIFSPQMIVGGRDFLRPLVFFPEATLQSELASFLMDHVFQPGDL
 GSGA (SEQ ID NO:535); ACSYLLCNPEFTFFSRADFARSQVLDLLTDRFQQE
 LEELLQVG (SEQ ID NO:536), QKQLSSLRDRMVAFCCLCQSCLSVDTEIQEQV
 ST (SEQ ID NO:537); QVILPALTLVYFSILWTLTHISKSDAS (SEQ ID NO:538);
 STHDLTRWELYEPCCQLLQKAVDTGXVPHQV (SEQ ID NO:539). Also preferred
 are polynucleotide fragments encoding these polypeptide fragments (See Accession
 No. R65208) This gene maps to chromosome 7, and therefore, may be used as a
 marker in linkage analysis for chromosome 7 (See Accession No. D52585).

This gene is expressed primarily in the brain (infant brain, adult brain, pituitary, cerebellum, hippocampus, schizophrenic hypothalamus, amygdala).

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, developmental and neurodegenerative diseases of the brain and nervous system. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the central nervous system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those

comprising a sequence shown in SEQ ID NO: 306 as residues: Thr-25 to Lys-36, Lys-55 to Ser-63.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for detection and treatment of developmental, degenerative and behavioral conditions of the brain and nervous system (e.g. schizophrenia, depression, Alzheimer's disease, Parkinson's disease, Huntington's disease, mania, dementia, paranoia, addictive behavior and sleep disorders).

FEATURES OF PROTEIN ENCODED BY GENE NO: 74

This gene is expressed primarily in the hypothalamus of a human suffering from schizophrenia.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, disorders of the CNS particularly schizophrenia. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the CNS, such as schizophrenia expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 307 as residues: Gly-38 to Ala-44.

The tissue distribution indicates that the protein products of this gene are useful for the study, diagnosis and treatment of schizophrenia and other disorders involving the CNS.

FEATURES OF PROTEIN ENCODED BY GENE NO: 75

Preferred polypeptides of the invention comprise the following amino acid sequence encoded by this gene:

LAVSTSFICCADISTALPLGSSRPAPAPRHREHEHGHQARPPRLXTSLMPLSTP
AAAQLLWTQLTPMGGRPGGRHSPPTLHTGPRALPPGPPHPSLHVAALSLLR

(SEQ ID NO:540). Polynucleotides encoding such polypeptides are also provided.

This gene is expressed primarily in endometrial tumor and to a lesser extent in amniotic cells.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, reproductive and immune disorders particularly cancers of those systems. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the reproductive and immune systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 308 as residues: Ser-3 to Arg-9.

The tissue distribution indicates that the protein products of this gene are useful for study and treatment of immune and reproductive disorders particularly cancers of those systems.

FEATURES OF PROTEIN ENCODED BY GENE NO: 76

This gene is expressed primarily in kidney cortex and to a lesser extent in early stage human brain.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, renal disorders such as renal cancer. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the kidney expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 309 as residues: Gly-38 to Gly-45, Gly-47 to Gly-52, Pro-92 to Lys-110.

The tissue distribution indicates that the protein products of this gene are useful for study, treatment and diagnosis of renal diseases such as cancer of the kidney.

FEATURES OF PROTEIN ENCODED BY GENE NO: 77

This gene is expressed primarily in kidney medulla.

Therefore, polynucleotides and polypeptides of the invention are useful as
5 reagents for differential identification of the tissue(s) or cell type(s) present in a
biological sample and for diagnosis of diseases and conditions, which include, but are
not limited to, metabolic and renal disorders. Similarly, polypeptides and antibodies
directed to these polypeptides are useful in providing immunological probes for
differential identification of the tissue(s) or cell type(s). For a number of disorders of
10 the above tissues or cells, particularly of the metabolic and renal systems, expression of
this gene at significantly higher or lower levels may be routinely detected in certain
tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma,
urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an
individual having such a disorder, relative to the standard gene expression level, i.e.,
15 the expression level in healthy tissue or bodily fluid from an individual not having the
disorder.

The tissue distribution indicates that the protein products of this gene are useful
for study, treatment and diagnosis of metabolic and renal diseases and disorders.

20 FEATURES OF PROTEIN ENCODED BY GENE NO: 78

This gene is expressed in chronic synovitis and microvascular endothelium.

Therefore, polynucleotides and polypeptides of the invention are useful as
reagents for differential identification of the tissue(s) or cell type(s) present in a
biological sample and for diagnosis of diseases and conditions, which include, but are
25 not limited to, arthritis and atherosclerosis. Similarly, polypeptides and antibodies
directed to these polypeptides are useful in providing immunological probes for
differential identification of the tissue(s) or cell type(s). For a number of disorders of
the above tissues or cells, particularly of the vascular and skeletal systems, expression
of this gene at significantly higher or lower levels may be routinely detected in certain
30 tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma,
urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an
individual having such a disorder, relative to the standard gene expression level, i.e.,
the expression level in healthy tissue or bodily fluid from an individual not having the
disorder.

35 The tissue distribution indicates that the protein products of this gene are useful
for study, diagnosis and treatment of arthritic and other inflammatory diseases as well
as cardiovascular diseases.

FEATURES OF PROTEIN ENCODED BY GENE NO: 79

This gene is expressed in resting T-cells and activated monocytes.

Therefore, polynucleotides and polypeptides of the invention are useful as
5 reagents for differential identification of the tissue(s) or cell type(s) present in a
biological sample and for diagnosis of diseases and conditions, which include, but are
not limited to, immune disorders. Similarly, polypeptides and antibodies directed to
these polypeptides are useful in providing immunological probes for differential
10 identification of the tissue(s) or cell type(s). For a number of disorders of the above
tissues or cells, particularly of the immune system, expression of this gene at
significantly higher or lower levels may be routinely detected in certain tissues (e.g.,
cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial
fluid or spinal fluid) or another tissue or cell sample taken from an individual having
15 such a disorder, relative to the standard gene expression level, i.e., the expression level
in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that the protein products of this gene are useful
for the study and treatment of immune diseases such as inflammatory conditions.

FEATURES OF PROTEIN ENCODED BY GENE NO: 80

20 This gene is expressed in a variety of immune system tissues, e.g., neutrophils,
T-cells, and TNF induced epithelial and endothelial cells.

Therefore, polynucleotides and polypeptides of the invention are useful as
reagents for differential identification of the tissue(s) or cell type(s) present in a
biological sample and for diagnosis of diseases and conditions, which include, but are
25 not limited to, infectious and immune disorders. Similarly, polypeptides and antibodies
directed to these polypeptides are useful in providing immunological probes for
differential identification of the tissue(s) or cell type(s). For a number of disorders of
the above tissues or cells, particularly of the immune and vascular systems, expression
of this gene at significantly higher or lower levels may be routinely detected in certain
30 tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma,
urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an
individual having such a disorder, relative to the standard gene expression level, i.e.,
the expression level in healthy tissue or bodily fluid from an individual not having the
disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID
35 NO: 313 as residues: Met-1 to Trp-6.

The tissue distribution indicates that the protein products of this gene are useful
for study and treatment of infectious diseases, immune and vascular disorders.

FEATURES OF PROTEIN ENCODED BY GENE NO: 81

This gene is expressed in activated neutrophils.

Therefore, polynucleotides and polypeptides of the invention are useful as
5 reagents for differential identification of the tissue(s) or cell type(s) present in a
biological sample and for diagnosis of diseases and conditions, which include, but are
not limited to, inflammation and other immune conditions. Similarly, polypeptides and
antibodies directed to these polypeptides are useful in providing immunological probes
10 for differential identification of the tissue(s) or cell type(s). For a number of disorders
of the above tissues or cells, particularly of the immune system, expression of this gene
at significantly higher or lower levels may be routinely detected in certain tissues (e.g.,
cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial
fluid or spinal fluid) or another tissue or cell sample taken from an individual having
15 such a disorder, relative to the standard gene expression level, i.e., the expression level
in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that the protein products of this gene are useful
for study and treatment of immune disorders.

FEATURES OF PROTEIN ENCODED BY GENE NO: 82

20 This gene is expressed in neutrophils.

Therefore, polynucleotides and polypeptides of the invention are useful as
reagents for differential identification of the tissue(s) or cell type(s) present in a
biological sample and for diagnosis of diseases and conditions, which include, but are
not limited to, inflammatory and other immune conditions. Similarly, polypeptides and
25 antibodies directed to these polypeptides are useful in providing immunological probes
for differential identification of the tissue(s) or cell type(s). For a number of disorders
of the above tissues or cells, particularly of the immune system, expression of this gene
at significantly higher or lower levels may be routinely detected in certain tissues (e.g.,
cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial
30 fluid or spinal fluid) or another tissue or cell sample taken from an individual having
such a disorder, relative to the standard gene expression level, i.e., the expression level
in healthy tissue or bodily fluid from an individual not having the disorder. Preferred
epitopes include those comprising a sequence shown in SEQ ID NO: 315 as residues:
Ala-83 to Thr-91.

35 The tissue distribution indicates that the protein products of this gene are useful
for study and treatment of immune disorders.

FEATURES OF PROTEIN ENCODED BY GENE NO: 83

This gene is expressed in human neutrophils.

Therefore, polynucleotides and polypeptides of the invention are useful as
5 reagents for differential identification of the tissue(s) or cell type(s) present in a
biological sample and for diagnosis of diseases and conditions, which include, but are
not limited to, inflammation and immune disorders. Similarly, polypeptides and
antibodies directed to these polypeptides are useful in providing immunological probes
10 for differential identification of the tissue(s) or cell type(s). For a number of disorders
of the above tissues or cells, particularly of the immune and inflammatory system,
expression of this gene at significantly higher or lower levels may be routinely detected
in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum,
plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from
15 an individual having such a disorder, relative to the standard gene expression level, i.e.,
the expression level in healthy tissue or bodily fluid from an individual not having the
disorder.

The tissue distribution indicates that the protein products of this gene are useful
for diagnosis and treatment of disorders of the inflammatory and immune systems.

20 FEATURES OF PROTEIN ENCODED BY GENE NO: 84

This gene is expressed in human neutrophils.

Therefore, polynucleotides and polypeptides of the invention are useful as
reagents for differential identification of the tissue(s) or cell type(s) present in a
biological sample and for diagnosis of diseases and conditions, which include, but are
25 not limited to, disorders of the inflammatory and immune systems. Similarly,
polypeptides and antibodies directed to these polypeptides are useful in providing
immunological probes for differential identification of the tissue(s) or cell type(s). For
a number of disorders of the above tissues or cells, particularly of the inflammatory and
immune systems, expression of this gene at significantly higher or lower levels may be
30 routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily
fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or
cell sample taken from an individual having such a disorder, relative to the standard
gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an
individual not having the disorder.

35 The tissue distribution indicates that the protein products of this gene are useful
for diagnosis and treatment of disorders of the immune and inflammatory systems.

FEATURES OF PROTEIN ENCODED BY GENE NO: 85

This gene is expressed in activated neutrophils.

Therefore, polynucleotides and polypeptides of the invention are useful as
5 reagents for differential identification of the tissue(s) or cell type(s) present in a
biological sample and for diagnosis of diseases and conditions, which include, but are
not limited to, inflammation and immune system diseases. Similarly, polypeptides and
antibodies directed to these polypeptides are useful in providing immunological probes
for differential identification of the tissue(s) or cell type(s). For a number of disorders
10 of the above tissues or cells, particularly of the immune system and inflammatory
system, expression of this gene at significantly higher or lower levels may be routinely
detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g.,
serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample
taken from an individual having such a disorder, relative to the standard gene
15 expression level, i.e., the expression level in healthy tissue or bodily fluid from an
individual not having the disorder.

The tissue distribution indicates that the protein products of this gene are useful
for diagnosis and treatment of diseases of the inflammatory and immune systems.

20 FEATURES OF PROTEIN ENCODED BY GENE NO: 86

This gene is expressed in activated neutrophils.

Therefore, polynucleotides and polypeptides of the invention are useful as
reagents for differential identification of the tissue(s) or cell type(s) present in a
biological sample and for diagnosis of diseases and conditions, which include, but are
25 not limited to, inflammation and immune system disorders. Similarly, polypeptides and
antibodies directed to these polypeptides are useful in providing immunological probes
for differential identification of the tissue(s) or cell type(s). For a number of disorders
of the above tissues or cells, particularly of the inflammatory and immune system,
expression of this gene at significantly higher or lower levels may be routinely detected
30 in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum,
plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from
an individual having such a disorder, relative to the standard gene expression level, i.e.,
the expression level in healthy tissue or bodily fluid from an individual not having the
disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID
35 NO: 319 as residues: Met-1 to Gly-6, Gly-32 to Pro-43, Leu-55 to Gln-60.

The tissue distribution indicates that the protein products of this gene are useful
for diagnosis and treatment of disorders of the immune and inflammatory system.

FEATURES OF PROTEIN ENCODED BY GENE NO: 87

In specific embodiments, polypeptides of the invention comprise the sequence:
 EQVLALLWPRFELILEMNVQSVRSTDPQRLGGLDTRPHYITRRYAEFSSALVSIN
 5 QTIPNERTMQLLGQLQVEVENFVLRVAAEFSSRKEQLVFLINNYDMMLGVLME
 RAADD SKEVESFQQLNARTQEFIEELLSPF GGLVAFVKEAEALIERGQAERLR
 GEEARVTQLIRGFGSSWKSSVESLSQDVMRSFTNFRNGTSIIQG (SEQ ID
 NO:541), ALLKYRFFYQFLLGNERATAKEIRDEYVETLSKIYLSYRSYLGRMLK
 VQYEEVAEKDDLMGVEDTAKKGFXSKPSRSRNTIFTLGTRGSVISPTELEAPILV
 10 PHTAQR (SEQ ID NO: 542); EQRYPF EALFRSQHYXLLDNSCREYLFICEFFVVS
 GPXAHDLFHAVMGRTLSMTLKHLD SYLADCYDAIAVFLCIHIVLRFRNIAAKRD
 VPALDRYW (SEQ ID NO:543), GGLDTRPHYITRRYAEFSSALVSINQ (SEQ ID
 NO:544); SRKEQLVFLINNYDMMLGVL (SEQ ID NO: 545) and/or ALLKYRFFY
 QFLLGNERATAKEIRDEYVETLSKIYLSYRSYLGRMLKVQYEEVAEKDDLMG
 15 VEDTAKKGFXSKPSLRSRNTIFTLGTRGSVISPTELEAPILVPHTAQRXEQRYPF
 EALFRSQHYXLLDNSCREYLFICEFFVVS GPXAHDLFHAVMGRTLSMTLKHLD
 SYLADCYDAIAVFLCIHIVLRFRNIAAKRDVPALDRYWEQVLALLWPRFELILEM
 NVQSVRSTDPQRLGGLDTRPHYITRRYAEFSSALVSINQTIPNERTMQLLGQLQV
 20 ARTQEFIEELLSPF GGLVAFVKEAEALIERGQAERLRGEEARVTQLIRGFGSSW
 KSSVESLSQDVMRSFTNFRNGTS (SEQ ID NO:546). Polynucleotides encoding
 these polypeptides are also encompassed by the invention. The translation product of
 this gene shares sequence homology with suppressor of actin mutation which is thought
 to be important in mutation suppression.

25 This gene is expressed primarily in fetal liver and to a lesser extent in a variety
 of other tissues.

Therefore, polynucleotides and polypeptides of the invention are useful as
 reagents for differential identification of the tissue(s) or cell type(s) present in a
 biological sample and for diagnosis of diseases and conditions, which include, but are
 30 not limited to, liver and mutations. Similarly, polypeptides and antibodies directed to
 these polypeptides are useful in providing immunological probes for differential
 identification of the tissue(s) or cell type(s). For a number of disorders of the above
 tissues or cells, particularly of the liver or cancer, expression of this gene at
 significantly higher or lower levels may be routinely detected in certain tissues (e.g.,
 35 cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial
 fluid or spinal fluid) or another tissue or cell sample taken from an individual having
 such a disorder, relative to the standard gene expression level, i.e., the expression level

in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 320 as residues: Val-53 to Arg-60, Thr-88 to Thr-94, Ala-142 to Ser-150, Gly-188 to Glu-196, Gly-208 to Ser-214, Thr-227 to Gly-232, Lys-279 to Phe-285.

- 5 The tissue distribution and homology to suppressor of actin mutation suggest that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and of liver disorder or cancer.

FEATURES OF PROTEIN ENCODED BY GENE NO: 88

- 10 This gene maps to chromosome 9, and therefore can be used in linkage analysis as a marker for chromosome 9. In specific embodiments, polypeptides of the invention comprise the sequence:

YEGKEFDYVFSIDVNEGGPSYKLPYNTSDDPWLTAYNFLQKNDLNPMFLDQVA
KFIIDNTKGQMLGLGNPSFSDPFTGGGRYVPGSSGSSNTLPTADPFTGAGRYV
15 PGASMGTTMAGVDPFTGNSAYRSAASKTMNIYFPKKEAVTFDQANPTQILGK
LKELNGTAPEEKKLTEDDLILLEKILSLICNSSSEKPTVQQLQILWKAINCPEDIV
FPALDILRLSIKHPSVNENFCNEKEGAQFSSHLINLLNPKGKPANQLLALRTFC
NCFVGQAGQKLMMSQRESLSHAIELKSGSNKNI (SEQ ID NO: 547);
HIALATLALNYSVCFHKD (SEQ ID NO: 548); HNIEGKAQCLSLISTILEVVQ
20 DLEATFRLLVALGTLISDDSNVQLAKS (SEQ ID NO:549); LGVDSQIKKYSS
VSEPAKVSECCRFILNLL (SEQ ID NO:550); and/or YEGKEFDYVFSIDVNEGGPS
YKLPYNTSDDPWLTAYNFLQKNDLNPMFLDQVAKFIIDNTKGQMLGLGNPSFS
DPFTGGGRYVPGSSGSSNTLPTADPFTGAGRYVPGSASMGTTMAGVDPFTGN
SAYRSAASKTMNIYFPKKEAVTFDQANPTQILGKLEKELNGTAPEEKKLTEDDLI
25 LLEKILSLICNSSSEKPTVQQLQILWKAINCPEDIVFPALDILRLSIKHPSVNENFC
NEKEGAQFSSHLINLLNPKGKPANQLLALRTFCNCFVGQAGQKLMMSQRESL
MSHAIELKSGSNKNIHIALATLALNYSVCFHKDHNIEGKAQCLSLISTILEVVQD
LEATFRLLVALGTLISDDSNVQLAKSLGVDSQIKKYSSVSEPAKVSECCRFILN
LL (SEQ ID NO:551). Polynucleotides encoding these polypeptides are also
30 encompassed by the invention. These polypeptides share significant homology with
phospholipase A2 activating protein which is thought to be important in signal
transduction (see, e.g., Wang et al., Gene 161(2):237-241 (1995)).

- 35 This gene is expressed primarily in endothelial cells, to a less extent in placenta, endometrial stromal cells, osteosarcoma, testis tumor, muscle, and infant brain that are likely to be rich in blood vessels.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a

biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, disorders in vascular system, aberrant angiogenesis, tumor angiogenesis. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the vascular system or tumors, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution of this gene in endothelial cells and several potential highly vascularized tissues and its homology to phospholipase A2 activating protein suggest that this gene may be involved in transducing signals for endothelial cells in angiogenesis or vasculogenesis.

FEATURES OF PROTEIN ENCODED BY GENE NO: 89

In specific embodiments, polypeptides of the invention comprise the sequence: YPNQDGDILRDQVLHEHIQRLSKVVTANHRALQIPEVYLREAPWPSAQSEIRTIS AYKTPRDKVQCILRMCSTIMNLLSLANEDSVPGADDFVPVLVFLIKANPPCLL STVQYISSFYASCLSGEESYWWMQFTA AVE (SEQ ID NO:552); YPNQDGDILR DQVLHEHIQRLSKVVTANHRALQIPEVYLREAPWPSAQSEIRTISAYKTPRDKVQ CILRMCSTIMNLLSLANEDSVPGADDFVPVLVFLIKANPPCLLSTVQYISSFYA SCLSGEESYWWMQFTA AVEFIKTI (SEQ ID NO:553); YPNQDGDILRDQVL (SEQ ID NO:554); EAPWPSAQSEI (SEQ ID NO:555); PVLVFLIKANP (SEQ ID NO:560); SGEESYWWMQFTA AVEFIKTI (SEQ ID NO:556); ADDFVPVLVFLIKANPP (SEQ ID NO:557); YKTPRDKVQCIL (SEQ ID NO:558); and/or GADDFVPVLVFLIK (SEQ ID NO:559). The translation product of this gene shares sequence homology with human ras inhibitor and yeast VPS9p which is thought to be important in golgi vacuole transport.

This gene is expressed primarily in T cells and melanocytes and to a lesser extent in a variety of other tissues.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, dysfunction and disorders involving T cells and melanocytes. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing

immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to ras inhibitor indicates that polynucleotides and polypeptides corresponding to this gene are useful for regulating signal transduction; diagnosis and treatment of disorders involving T cells and melanocytes.

FEATURES OF PROTEIN ENCODED BY GENE NO: 90

This gene maps to chromosome 9 and therefore polypeptides of the invention can be used in linkage analysis as a marker for chromosome 9. The translation product of this gene shares sequence homology with neuronal olfactomedin-related ER localized protein which is thought to be important in influence the maintenance, growth, or differentiation of chemosensory cilia on the apical dendrites of olfactory neurons. In specific embodiments, polypeptides of the invention comprise the sequence: SARASTQPPAGQHGPC (SEQ ID NO:561); MPGRWRWQRDMHPARKLLSLL FLILMGTELTQD (SEQ ID NO:562); SAAPDSLLRSSKGSTRGSL (SEQ ID NO:563); AAIVIWRGKSESRIAKTPGI (SEQ ID NO:564); FRGGGTLLVLPPTH PEWLIL (SEQ ID NO:567); PLGITLPLGAPETGGGD (SEQ ID NO:565); and/or CAAETWKGSQRAGQLCALLA (SEQ ID NO:566).

This gene is expressed in pineal gland.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, neurological and endocrinological disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the neurological or endocrine systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e.,

the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 323 as residues: Leu-20 to Ala-26, Arg-32 to Arg-39, Thr-104 to Gly-112.

5 The tissue distribution and homology to olfactomedin-related protein indicates that polynucleotides and polypeptides corresponding to this gene are useful for maintenance, growth, or differentiation of neuron cells in pineal gland, therefore, may be useful for diagnosis and treatment of neurological disorders in pineal gland.

FEATURES OF PROTEIN ENCODED BY GENE NO: 91

10 This gene is expressed primarily in prostate and apoptotic T cells.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, prostate disease and T cell dysfunction. Similarly, polypeptides and
15 antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the prostate cancer, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial
20 fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for detect abnormal activity in prostate and T cells
25 or probably treatment of this abnormality.

FEATURES OF PROTEIN ENCODED BY GENE NO: 92

This gene is expressed primarily in prostate and to a lesser extent in smooth muscle cells, fibroblasts, and placenta.

30 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, disorders in prostate or vascular system. Similarly, polypeptides and
35 antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the prostate or vascular system, expression of this gene at significantly higher or lower levels may be routinely detected in certain

tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for regulating function of prostate or highly vascularized tissues, e.g. placenta.

10 **FEATURES OF PROTEIN ENCODED BY GENE NO: 93**

This gene is expressed primarily in embryos and fetal tissues stage human and to a lesser extent in a wide variety of other proliferative tissues.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, disorders in embryonic development and cell proliferation. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the embryonic tissues and proliferative cells, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis or treatment of abnormalities in developing and proliferative cells and organs.

30 **FEATURES OF PROTEIN ENCODED BY GENE NO: 94**

The translation product of this gene shares sequence homology with transformation related protein which is thought to be important in transformation.

This gene is expressed primarily in female reproductive tissues, i.e., breast cancer cells, placenta, and ovary and to a lesser extent in fetal lung.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are

not limited to, cancer or dysfunction of reproductive tissues. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the reproduction system,
5 expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the
10 disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 327 as residues: Ser-50 to Pro-61.

The tissue distribution and homology to transformation related protein indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of conditions caused by transformation, i.e. tumorigenesis in
15 reproductive organs, e.g. breast, placenta, and ovary.

FEATURES OF PROTEIN ENCODED BY GENE NO: 95

This gene is expressed primarily in testes, rhabdomyosarcoma, infant brain and to a lesser extent in some tumors and highly vascularized tissues.

20 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, tumorigenesis, abnormal angiogenesis, and/or neurological disorders. , Similarly, polypeptides and antibodies directed to these polypeptides are useful in
25 providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the tumor tissues or vascular tissues, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or
30 another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 328 as residues: Arg-46 to Trp-54, Pro-60 to Ile-69, Asn-116 to Ala-122, Arg-147 to Lys-153, Ser-158 to Glu-170, Ile-399 to
35 Ser-405, Pro-486 to Met-499, Pro-502 to Asp-508.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for a range of disease states including treatment of

tumor or vascular disorders and the treatment of neurological disorders such as Alzheimer's Disease, Parkinson's Disease, Huntingtons Disease, schizophrenia, mania, dementia, paranoia, obsessive compulsive disorder and panic disorder.

5 FEATURES OF PROTEIN ENCODED BY GENE NO: 96

This gene maps to chromosome 7 and therefore polynucleotides of the present invention can be used in linkage analysis as a marker for chromosome 7. The translation product of this gene is homologous to the *Clostridium perfringens* enterotoxin (CPE) receptor gene product and shares sequence homology with a human ORF specific to prostate and a glycoprotein specific to oligodendrocytes both of which are tissue specific proteins. (See e.g., Katahira et al., J Cell Biol. 136(6):1239-1247 (1997). PMID: 9087440; UI: 97242441.

This gene is expressed primarily in pancreas tumor and ulcerative colitis and to a lesser extent in several tumors and normal tissues.

15 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, pancreatic disorder, ulcerative colitis, tumors and food poisoning. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the digestive system or tumorigenic system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 329 as residues: Gly-147 to Met-152, Cys-177 to Lys-188.

30 The tissue distribution and homology to prostate and oligodendrocyte-specific protein indicates that polynucleotides and polypeptides corresponding to this gene are useful for marker of diagnosis or treatment of disorder in pancreas, ulcerative colitis, and tumors. Furthermore, identity to the human receptor for *Clostridium perfringens* enterotoxin indicates that the soluble portion of this receptor could be used in the treatment of food poisoning associated with *Clostridia perfringens* by blocking the activity of *perfringens* enterotoxin.

FEATURES OF PROTEIN ENCODED BY GENE NO: 97

The translation product of this gene shares sequence homology with ATPase which is thought to be important in metabolism.

- 5 This gene is expressed primarily in testes and several hematopoietic cells and to a lesser extent in other tissues.

- Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, leukemia and hematopoietic disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the hematopoietic system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 330 as residues: Leu-37 to Ala-42.

The tissue distribution and homology to ATPase indicates that polynucleotides and polypeptides corresponding to this gene are useful for marker of diagnosis and treatment of leukemia and other hematopoietic disorders.

25 FEATURES OF PROTEIN ENCODED BY GENE NO: 98

- In specific embodiments, polypeptides of the invention comprise the sequence: MRSARPSLGCLPSWAFSQALNI (SEQ ID NO:568); LLGLKGLAPAEISAVCE KGNFN (SEQ ID NO:569); VAHGLAWSYYIGYLRILPELQARIR (SEQ ID NO:570); TYNQHYNNLLRGAVSQRC (SEQ ID NO:571); ILLPLDCGVDPNLSM ADPNIRFLDKLPQQTGDRAGIKDRVYSN (SEQ ID NO:572); SIYELLENGQRAGT CVLEYATPLQTLFAMSQYSQAGFSGEDRLEQ (SEQ ID NO:573); AKLFCRTLE DILADAPESQNNCRLLIAYQEPADDSSFSLSQEVLRHLRQEEKEEVTGSLKTS AV PSTSTMSQEPPELLISGMEKPLPLRTDFS (SEQ ID NO:574); and/or LLGLKGLA PAEISAVCEKGNFNVAHGLAWSYYIGYLRILPEL (SEQ ID NO:575).

- 35 Polynucleotides encoding these polypeptides are also encompassed by the invention.

This gene is expressed primarily in prostate BPH and to a lesser extent in bone marrow.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, benign prostatic hypertrophy or prostate cancer. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the male urinary system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO:331 as residues: Ile-60 to Asn-69, Leu-106 to Asp-112, Glu-130 to Gly-136, Phe-160 to Glu-167, Pro-184 to Cys-190, Glu-197 to Ser-202, Arg-215 to Glu-221, Thr-237 to Pro-242.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis or treatment of benign prostatic hypertrophy or prostate cancer.

FEATURES OF PROTEIN ENCODED BY GENE NO: 99

This gene is expressed primarily in salivary gland.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, disorders or injuries of the salivary gland. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of glandular tissues, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment of disorders of, or injuries to the salivary gland or other glandular tissue.

FEATURES OF PROTEIN ENCODED BY GENE NO: 100

This gene maps to chromosome 15, accordingly, polynucleotides of the invention can be used in linkage analysis as a marker for chromosome 15. The translation product of this gene shares sequence homology with a *C.elegans* gene of unknown function. In specific embodiments, polypeptides of the invention comprise the sequence: DPRVRLNSLTCKHIFISLTQ (SEQ ID NO:583); TMKLLKLRRNIV KLSLYRHFTN (SEQ ID NO:576); TLILAVAASIVFIIWTTMKFRI (SEQ ID NO:577); VTCQSDWRELWVDDAIWRLLFSMILFVI (SEQ ID NO:578); MVLWR PSANNQRFAFSPLSEEEEEDEQ (SEQ ID NO:580); KEPMLKESFEGMKMRS TKQEPNGNSKVNKAQEDDL (SEQ ID NO:584); and/or KWVEENVPSVTDVALP ALLDSDEERMITHFERSKME (SEQ ID NO:582). Polynucleotides encoding these polypeptides are also encompassed by the invention.

This gene is expressed primarily in thyroid and to a lesser extent in osteoclastoma, kidney medulla, and lung.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, thyroid dysfunction or cancer. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the endocrine system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 333 as residues: Lys-107 to Leu-124, Glu-150 to Thr-159, Pro-173 to Asp-179, Ser-192 to Ser-201.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of thyroid dysfunction or cancer.

FEATURES OF PROTEIN ENCODED BY GENE NO: 101

This gene maps to chromosome 16, therefore polynucleotides of the invention can be used in linkage analysis as a marker for chromosome 16. In specific embodiments, polypeptides of the invention comprise the sequence:

IRHELTVLRDTRPACA (SEQ ID NO:585); and/or MDFXMALIYD (SEQ ID NO:586). Polynucleotides encoding these polypeptides are also encompassed by the invention.

5 This gene is expressed primarily in kidney cortex and to a lesser extent in adult brain, corpus colosum, hippocampus, and frontal cortex.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, neurological disorders. Similarly, polypeptides and antibodies directed to
 10 these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the central nervous system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial
 15 fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment or diagnosis of neurological
 20 disorders.

FEATURES OF PROTEIN ENCODED BY GENE NO: 102

In specific embodiments, polypeptides of the invention comprise the sequence:
 MQEMMRNQDRALSNLESIPGGYNA (SEQ ID NO:587); LRRMYTDIQEPMLSA
 25 AQEQF GGNPF (SEQ ID NO:588); ASLVNTSSGEGSQPSRTENRDPLPNPWAP
 QT (SEQ ID NO:589); SQSSASSGTASTVGGTTGSTASGTSGQSTTAPNLVPGV
 GASMFNTPG MQSLLQQITENPQLMQNMLSAPY (SEQ ID NO:590);
 MRSMMQSLSQNPDLAAQMMLNNPLFAGNPQLQE QMRQQLPTFLQQ (SEQ ID
 NO:591); MQNPDTLSAMSNPRAMQALLQIQQGLQTLATEAPGLIPGFTPGLG
 30 ALGSTGGSSGTNGSNATPSENTSPTAGT (SEQ ID NO:592); TEPGHQQFI
 QQMLQALAGVNPQLQNPEVRFQQQLEQLSAMGFLNREANLQALATGGDINAA
 IERLLGSQPS (SEQ ID NO:593); RNPAMMQEMMRNQDRALSNLESIPGGY
 NALRRMYTDIQEPMLSAA (SEQ ID NO:594); GNPFASLVNTSS (SEQ ID
 NO:595); ENRDPLPNPWA (SEQ ID NO:595); GKILKDQDTLSQHGHD (SEQ ID
 35 NO:597); GLTVHLVIKTQNRP (SEQ ID NO:598); SELQSQMQRQLLSNPPEMM
 (SEQ ID NO:599); PEISHMLNPNPDIMR (SEQ ID NO:600); and/or
 RQLIMANPQMQQLIQRNP (SEQ ID NO:601). Polynucleotides encoding these

polypeptides are also encompassed by the invention.

This gene is expressed primarily in breast.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, breast cancer. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of tumor systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment and diagnosis of some types of breast cancer.

FEATURES OF PROTEIN ENCODED BY GENE NO: 103

The translation product of this gene shares sequence homology with secreted serine proteases and lysozyme C precursor, which is thought to be important in bacteriolytic function. In specific embodiments, polypeptides of the invention comprise the sequence: NLCHVDCQDLLNP NLLAGIHCAKRIVS (SEQ ID NO:602); LDGFEGYSLSDWLCLAFVESKFN (SEQ ID NO:603); NENADGSFDYGLFQINSHYWCN (SEQ ID NO:604); and/or NLCHVDCQDLLNP NLLAGIHCAKRIVS (SEQ ID NO:605). Polynucleotides encoding these polypeptides are also encompassed by the invention.

This gene is expressed primarily in testes.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, infection. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or

another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 336 as residues: Ile-62 to Phe-70, Asn-78 to Asn-84.

The tissue distribution and homology to lysozyme C precursor indicates that polynucleotides and polypeptides corresponding to this gene are useful for boosting the monocyte-macrophage system and enhance the activity of immunoagents.

10 FEATURES OF PROTEIN ENCODED BY GENE NO: 104

This gene is expressed primarily in apoptotic T-cell.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, immune disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment and diagnosis of some immune disorders.

FEATURES OF PROTEIN ENCODED BY GENE NO: 105

The translation product of this gene shares sequence homology with ARI protein of Drosophila (accession 2058299; EMBL: locus DMARIADNE, accession X98309), which is thought to be important in axonal path-finding in the central nervous system. In specific embodiments, polypeptides of the invention comprise the sequence IREVNEVIQNPAT (SEQ ID NO:606); ITRILLSHFNWDKEKLMERYF DGNLEKLFA (SEQ ID NO:607); NTRSSAQDMPCQICYLNYPNSYF (SEQ ID NO:608); TGLECGHKFCMQCWSEYLTTKIMEEGMGQTISCPAHG (SEQ ID NO:614); CDILVDDNTVMRLITDSKVKLKYQHLITNSFVECNRLKWKCPAPD CHHVVKVQYPDAKPV (SEQ ID NO:609); CDILVDDNTVMRLITDSK

VKLKYQHLITNSFVECNRLWKWCPAPDCHHVVKV (SEQ ID NO:610);
 GCNHMVCRNQNKAEFCWVCLGPWEPHGSAWYNCNRYNEDDAKAARDAQE
 RSRAALQRYL (SEQ ID NO:611); FYCNRYMNHMQSLRFEHKLYAQVKQ
 KMEEMQQHNMSWIEVQFLKKAVDVLCQCRATLMYT (SEQ ID NO: 612);
 5 YVFAFYLLKNNQSIIFENNQADLENATEVLSGYLERDISQDSLQDIKQKVQDKY
 RYCESR (SEQ ID NO:613) Polynucleotides encoding these polypeptides are also
 encompassed by the invention.

This gene is expressed primarily in adult brain, and to a lesser extent in
 endometrial tumor, melanocytes, and infant brain.

10 Therefore, polynucleotides and polypeptides of the invention are useful as
 reagents for differential identification of the tissue(s) or cell type(s) present in a
 biological sample and for diagnosis of diseases and conditions, which include, but are
 not limited to, diseases or injuries involving axonal path development. Similarly,
 polypeptides and antibodies directed to these polypeptides are useful in providing
 15 immunological probes for differential identification of the tissue(s) or cell type(s). For
 a number of disorders of the above tissues or cells, particularly of the central nervous
 system, expression of this gene at significantly higher or lower levels may be routinely
 detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g.,
 serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample
 20 taken from an individual having such a disorder, relative to the standard gene
 expression level, i.e., the expression level in healthy tissue or bodily fluid from an
 individual not having the disorder.

The tissue distribution and homology to ARI protein indicates that
 polynucleotides and polypeptides corresponding to this gene are useful for treatment of
 25 disease states or injuries involving axonal path development, including
 neurodegenerative diseases and nerve injury.

FEATURES OF PROTEIN ENCODED BY GENE NO: 106

The translation product of this gene shares sequence homology with cytochrome
 30 b561 [Sus scrofa] which is thought to be an integral membrane protein of
 neuroendocrine storage vesicles of neurotransmitters and peptide hormones.

This gene is expressed primarily in frontal cortex and to a lesser extent in
 rhabdomyosarcoma.

Therefore, polynucleotides and polypeptides of the invention are useful as
 35 reagents for differential identification of the tissue(s) or cell type(s) present in a
 biological sample and for diagnosis of diseases and conditions, which include, but are
 not limited to, neurological disorders. Similarly, polypeptides and antibodies directed to

these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the central nervous system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 339 as residues: Ser-18 to Pro-24.

The tissue distribution and homology to cytochrome b561 [*Sus scrofa*] indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment and diagnosis of neurological disorders. This gene may also be important in regulation of some types of cancers.

FEATURES OF PROTEIN ENCODED BY GENE NO: 107

In specific embodiments, polypeptides of the invention comprise the sequence: MWGYLFDVDAAWNFLGCLICGW (SEQ ID NO:615); MHFISSGNVSAIRSSILL RXSLSYLGNCRLRVSAIFVYFLLFLLLS (SEQ ID NO:616); and/or MDQALRGSPSE GFSTDPSPPQVGRQIPSFPPWRRLVLPKASGCFLEREWLVCVFKLRTRPGA EA HAYNSSILGGRGKGIT (SEQ ID NO:617). Polynucleotides encoding these polypeptides are also encompassed by the invention.

This gene is expressed primarily in pancreas tumor and to a lesser extent in cerebellum.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, pancreatic tumors. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the endocrine system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred

epitopes include those comprising a sequence shown in SEQ ID NO: 340 as residues: Pro-22 to Phe-33.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of pancreatic tumors.

5

FEATURES OF PROTEIN ENCODED BY GENE NO: 108

This gene maps to chromosome 17 and therefore polynucleotides of the invention can be used in linkage analysis as a marker for chromosome 17. In specific embodiments, polypeptides of the invention comprise the sequence:

10 MLPALASCCHFSPPEQAARLKKLQEQEKQQKVEFRKRMEKEVSDFIQDSGQIK
KKFQPMNKIERSILHDVVEVAGLTSFSFGEDDDCRYVMIFKKEFAPSDEELDSY
RRGEEWDPQKAEKRNXXELAQRQ (SEQ ID NO:618); EEEAAQQGPVVV
SPASDYKDKYSHLIGKGAAKDAAHMLQANKTYGCXPVANKRDTRSIEEAMNE
IRAKKRLRQSGE (SEQ ID NO:619); PPRRPAQLPLTPGAGQGAGRDKAAAIRA
15 HPGAPPLNHLLP (SEQ IDNO:620); AVPQAGGKQVFDLSPELGYVRGMCVCV
(SEQ ID NO:621) and/or MLPALASCCHFSPPEQAARLKKLQEQEKQQKVEFRK
RMEKEVSDFIQDSGQIKKKFQPMNKIERSILHDVVEVAGLTSFSFGEDDDCRYV
MIFKKEFAPSDEELDSYRRGEEWDPQKAEKRNXXELAQRQEEEEAAQQGPVVV
SPASDYKDKYSHLIGKGAAKDAAHMLQANKTYGCXPVANKRDTRSIEEAMNE
20 IRAKKRLRQSGE (SEQ ID NO:622). Polynucleotides encoding these polypeptides
are also encompassed by the invention. The translation product of this gene shares
sequence homology with FSA-1 which may play a role as a structural protein
component of the acrosome.

This gene is expressed primarily in fetal kidney and sperm.

25

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, male reproductive disorders, especially involving acrosomal dysfunction. Similarly, polypeptides and antibodies directed to these polypeptides are useful in
30 providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the male reproductive system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or
35 cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an

individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 341 as residues: Glu-8 to Asn-35.

The tissue distribution and homology to FSA-1 indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment of infertility due to
5 acrosomal disfunction of sperm.

FEATURES OF PROTEIN ENCODED BY GENE NO: 109

This gene is expressed primarily in pituitary and to a lesser extent in epididymus.

10 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, male reproductive disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for
15 differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the male reproductive system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an
20 individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 342 as residues: Met-1 to Trp-6.

Because the gene is found in both pituitary and epididymus, this indicates that
25 polynucleotides and polypeptides corresponding to this gene are useful for treatment and diagnosis of male reproductive disorders. This may involve a secreted peptide produced in the pituitary targeting the epididymus.

FEATURES OF PROTEIN ENCODED BY GENE NO: 110

30 In specific embodiments, polypeptides of the invention comprise the sequence: LLCPVLNSGXSWNFPHPQSQPEYSFHGFHSTRLWI (SEQ ID NO:623); and/or PSTPWFLFLLGLTCPFSTSHPRWDSIPP (SEQ ID NO:624). Polynucleotides encoding these polypeptides are also encompassed by the invention.

This gene is expressed primarily in resting T-cells. .

35 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are

not limited to, T-cell disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

10 The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment and diagnosis of certain immune disorders, especially those involving T-cells.

FEATURES OF PROTEIN ENCODED BY GENE NO: 111

15 This gene is expressed primarily in cerebellum and whole brain and to a lesser extent in infant brain and fetal kidney.

20 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, neurological disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the central nervous system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 344 as residues: Asp-48 to Gly-55.

30 The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of neurological disorders.

35 FEATURES OF PROTEIN ENCODED BY GENE NO: 112

 The translation product of this gene shares sequence homology with yeast mitochondrial ribosomal protein homologous to ribosomal protein s15 of E.coli which

is thought to be important in the early assembly of ribosomes (See Accession No. M38016). This gene maps to chromosome 1, and therefore, may be used as a marker in linkage analysis for chromosome 1.

This gene is expressed primarily in developmental tissues.

5 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, development of cancers and tumors in addition to healing wounds. Similarly, polypeptides and antibodies directed to these polypeptides are useful in
10 providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune and developmental expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or
15 another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to ribosomal protein s15 of *E. coli* indicates that polynucleotides and polypeptides corresponding to this gene are useful for
20 diseases related to the assembly of ribosomes in the mitochondria which is important in the translation of RNA into protein. Therefore, this indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and intervention of multiple tumors as well as in healing wounds which are thought to be under similar regulation as developmental tissues. Protein, as well as, antibodies directed against the
25 protein have utility as tumor markers, in addition to immunotherapy targets, for the above listed tumors and tissues.

FEATURES OF PROTEIN ENCODED BY GENE NO: 113

The translation product of this gene shares sequence homology with human
30 poliovirus receptor precursors which are thought to be important in viral binding and uptake. Preferred polypeptide fragments comprise the following amino acid sequence:
ELISISNVALADEGEYTCSTFTMPVRTAKSLVTVLGIPQKPIITGYKSSLREKDT
ATLNCQSSGSKPAARLTWRKGDQELHGEPTRIQEDPNGKTFTVSSSVTFQVTR
EDDGASIVCSVNHESLKGADRSTSQRIEVLYTPTAMIRPDPPHPREGQKLLHC
35 EGRGNPVPQQYLWEKEGSVPPLKMTQESALIFPFLNKSDSGTYGCTATSNMGS
YKAYYTLNVND (SEQ ID NO:625). Also preferred are polynucleotide fragments encoding these polypeptide fragments (See Accession No. gnllPID1002627).

This gene is expressed almost exclusively in human brain tissue.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, susceptibility to viral disease and diseases of the CNS especially cancers of that system. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the central nervous system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 346 as residues: Leu-26 to Asp-37, Lys-53 to Ser-59.

The tissue distribution and homology to poliovirus receptor precursors indicates that polynucleotides and polypeptides corresponding to this gene are useful for the treatment and prevention of diseases that involve the binding and uptake of virus particles for infection. It might also be helpful in genetic therapy where the goal is to insert foreign DNA into infected cells. With the help of this protein, the binding and uptake of this foreign DNA might be aided. In addition, it is expected that over expression of this gene will indicate abnormalities involving the CNS, particularly cancers of that system.

FEATURES OF PROTEIN ENCODED BY GENE NO: 114

The translation product of this gene shares sequence homology with YO87_CAEEL hypothetical 28.5 KD protein ZK1236.7 in chromosome III of *Caenorhabditis elegans* in addition to alpha-1 collagen type III (See Accession No. gil537432). One embodiment for this gene is the polypeptide fragment(s) comprising the following amino acid sequence: VPELPDRVHQLHQA VQGICALGRPGFPGGPTH SGHHKSHPGPAGGDYNRCDRPGQVHLHNPRGTGRRGQLHPTAGPGVHRRACPSQQPLPHRLGPGVPCPSPSLTPVLPSWTQSWCG LPGYTSSS (SEQ ID NO:630). An additional embodiment is the polynucleotide fragment(s) encoding these polypeptide fragments

This gene is expressed primarily in brain cells and to a lesser extent in activated B and T cells.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, neurodegeneration and immunological disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the neural and immune systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 347 as residues: Glu-34 to Glu-39, Gly-51 to Ser-72, Ala-88 to Glu-93, Gln-100 to Val-105.

The tissue distribution and homology to YO87_CAEEL hypothetical 28.5 KD protein ZK1236.7 in chromosome III of *Caenorhabditis elegans* as well as to a conserved alpha-1 collagen type III protein indicates that polynucleotides and polypeptides corresponding to this gene are useful for the detection and treatment of neurodegenerative disease states and behavioral disorders such as Alzheimer's Disease, Parkinson's Disease, Huntingtons' Disease, schizophrenia, mania, dementia, paranoia, obsessive compulsive disorder and panic disorders. Because the gene is expressed in cells of lymphoid origin, the natural gene product may be involved in immune functions. Therefore it may be also used as an agent for immunological disorders including arthritis, asthma, immune deficiency diseases such as AIDS, and leukemia.

FEATURES OF PROTEIN ENCODED BY GENE NO: 115

The translation product of this gene shares sequence homology with alpha 3 type IX collagen which is thought to be important in hyaline cartilage formation via its ability to uptake inorganic sulfate by cells (See Accession No. gil975657). One embodiment of this gene is the polypeptide fragment comprising the following amino acid sequence: SLRRPRSAAXQTLTFLSSVSSASSALPGSREPCDPRAPPPPR SGSAASCCSCCCSCPRRRAPLRSPRGSKRRIRQREVVDLYNGMCLQGPAVPG RDGSPGANGIPGTPGIPGRDGFKEGEGECLRESFEESWTPNYKQCSWSSLNY GIDLGKIAECTFTKMRSNSALRVLFSGSLRLKCRNACCQRWYFTFNGAECSSGP LPIEAIYLDQGSPEMNSTINIHTSSVEGLCEGIGAGLVDVAIWVGTCSDYPKG DASTGWNSVSRIIIIEELPK (SEQ ID NO:634). An additional embodiment are the

polynucleotide fragments encoding this polypeptide fragment.

This gene is expressed primarily in smooth muscle and to a lesser extent in synovial tissue.

Therefore, polynucleotides and polypeptides of the invention are useful as
5 reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, dwarfism, spinal deformation, and specific joint abnormalities as well as chondrodysplasias i.e., spondyloepiphyseal dysplasia congenita, familial osteoarthritis, Atelosteogenesis type II, metaphyseal chondrodysplasia type Schmid and autoimmune
10 disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the skeletal system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily
15 fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to alpha 3 type IX collagen indicates that
20 polynucleotides and polypeptides corresponding to this gene are useful for the treatment and diagnosis of diseases associated with the mutation in this gene which leads to the many different types of chondrodysplasias. By the use of this product, the abnormal growth and development of bones of the limbs and spine could be routinely detected or treated in utero since the protein or muteins thereof could affect epithelial cells early in
25 development and later the chondrocytes of the developing craniofacial structure.

FEATURES OF PROTEIN ENCODED BY GENE NO: 116

The translation product of this gene shares sequence homology with retrovirus-related reverse transcriptase which is thought to be important in viral replication. One
30 embodiment for this gene is the polypeptide fragments comprising the following amino acid sequence: TKKENC RPASLMNIDTKILNKILMNQ (SEQ ID NO:640). An additional embodiment is the polynucleotide fragments encoding these polypeptide fragments (See Accession No. pirlA25313IGNHUL1).

This gene is expressed primarily in human meningima.

35 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are

not limited to, retroviral diseases such as AIDS, and possibly certain cancers due to transactivation of latent cell division genes. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to retrovirus-related reverse transcriptase indicates that polynucleotides and polypeptides corresponding to this gene are useful for the detection and treatment of diseases and maladies associated with retroviral infection since a functional reverse transcriptase (RT) or RT-like molecule is an integral component of the retroviral life cycle.

FEATURES OF PROTEIN ENCODED BY GENE NO: 117

The translation product of this gene shares sequence homology with an unknown gene from *C. elegans*, as well as weak homolog with mammalian metaxin, a gene contiguous to both thrombospondin 3 and glucocerebrosidase, is known to be required for embryonic development. Preferred polypeptide fragments comprise the following amino acid sequence: MCNLPIKVVCRAEYMSPSGKVPXXHVGNNQ VVSELGPIVQFVKAKGHSLSGLEEVQKAEMKAYMELVNNMLLTAEYLQWC DEATVGXITHXRYGSPYPWPLXHILAYQKQWEVKRKXKAIGWGKKTLTDQVLE DVDQCCQALSQRLGTQPYFFNKQPTELDALVFGHLYTILTTQLTNDELSEKVKNY SNLLAFCRRI EQHYFEDRGKGRLS (SEQ ID NO:641); MCNLPIKVVCRAEYMSPSGKVPXXHVGNNQVVSELGPIVQFVK (SEQ ID NO:642). Also preferred are polynucleotide fragments encoding these polypeptide fragments (See Accession No. gil1326108).

This gene is expressed primarily in fetal tissues and to a lesser extent in hematopoietic cells and tissues, including spleen, monocytes, and T cells.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, cancer; lymphoproliferative disorders; inflammation; chondrosarcoma, and Gaucher disease. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification

of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the hematopoietic and embryonic systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for the diagnosis and treatment of cancer and other proliferative disorders. Expression in embryonic tissue and other cellular sources marked by proliferating cells indicates that this protein may play a role in the regulation or cellular division. Additionally, the expression in hematopoietic cells and tissues indicates that this protein may play a role in the proliferation, differentiation, and survival of hematopoietic cell lineages. Thus, this gene may be useful in the treatment of lymphoproliferative disorders, and in the maintenance and differentiation of various hematopoietic lineages from early hematopoietic stem and committed progenitor cells.

FEATURES OF PROTEIN ENCODED BY GENE NO: 118

The translation product of this gene shares sequence homology with reverse transcriptase which is important in the synthesis of a cDNA chain from an RNA molecule, and is a method whereby the infecting RNA chains of retroviruses are transcribed into their DNA complements. One embodiment for this gene is the polypeptide fragment comprising the following amino acid sequence:
 MXXXNSHITIFTLNVNGLNAPNERHRLANWIQSQDVCCIQETHLTGRDTHRL
 KIKGWRKIYQANGKQKK (SEQ ID NO:647). An additional embodiment is the polynucleotide fragments comprising polynucleotides encoding these polypeptide fragments (See Accession No. gil2072964).

This gene is expressed primarily in skin and to a lesser extent in neutrophils.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions which include, but are not limited to, cancer, hematopoietic disorders; inflammation; disorders of immune surveillance. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the epidermis and/or hematopoietic system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and

wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

- 5 The tissue distribution and homology to reverse transcriptase indicates that polynucleotides and polypeptides corresponding to this gene are useful for cancer therapy. Expression in the skin also indicates that this gene is useful in wound healing and fibrosis. Expression by neutrophils also indicates that this gene product plays a role in inflammation and the control of immune surveillance (i.e. recognition of viral
10 pathogens). Reverse transcriptase family members are also useful in the detection and treatment of AIDS.

FEATURES OF PROTEIN ENCODED BY GENE NO: 119

- 15 The translation product of this gene shares sequence homology with reverse transcriptase which is important in the synthesis of a cDNA copy of an RNA molecule, and is a method whereby a retrovirus reverse-transcribes its genome into an inheritable DNA copy.

 This gene is expressed primarily in the frontal cortex of brain.

- 20 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, cancer and neurodegenerative disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders
25 of the above tissues or cells, particularly of the CNS and peripheral nervous system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e.,
30 the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

- The tissue distribution and homology to reverse transcriptase suggest that this is useful in the treatment of cancer and AIDS. The expression in brain indicates that it plays a role in neurodegenerative disorders and in neural degeneration.

FEATURES OF PROTEIN ENCODED BY GENE NO: 120

One embodiment of this gene has homology to a hypothetical protein in *Schizosaccharomyces pombe* (See Accession No. 2281980). Another embodiment for this gene is the polypeptide fragments comprising the following amino acid sequence:
5 IYHLHSWIFFHFKRAFCMCFITMKVIAHCSKLRKCXNAQISVFCTTLTASYPT
(SEQ ID NO:651). An additional embodiment is the polynucleotide fragments encoding these polypeptide fragments. This gene maps to chromosome 18, and therefore, may be used as a marker in linkage analysis for chromosome 18.

10 This gene is expressed primarily in adult hypothalamus and to a lesser extent in infant brain.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, neurodegenerative disorders; endocrine function; and vertigo. Similarly,
15 polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the brain, CNS and peripheral nervous system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded
20 tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides
25 corresponding to this gene are useful for the treatment and diagnosis of neurodegenerative disorders; diagnosis of tumors of a brain or neuronal origin; treatments involving hormonal control of the entire body and of homeostasis, behavioral disorders, such as Alzheimer's Disease, Parkinson's Disease, Huntington's Disease, schizophrenia, mania, dementia, paranoia, obsessive compulsive disorder and
30 panic disorder. In addition, the gene or gene product may also play a role in the treatment and/or detection of developmental disorders associated with the developing embryo.

FEATURES OF PROTEIN ENCODED BY GENE NO: 121

35 The translation product of this gene shares sequence homology with the human IRLB protein which is thought to be important in binding to a c-myc promoter element and thus regulating its transcription (See Accession No. gi133969). This gene maps to

chromosome 1, and therefore, may be used as a marker in linkage analysis for chromosome 1.

This gene is expressed primarily in brain and breast and to a lesser extent in a variety of hematopoietic tissues and cells.

5 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, cancer of the brain and breast; lymphoproliferative disorders; neurodegenerative diseases. Similarly, polypeptides and antibodies directed to these
10 polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the CNS, breast, and immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial
15 fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for the treatment and diagnosis of cancer of the
20 brain, breast, and hematopoietic system. In addition, it may be useful for the treatment of neurodegenerative disorders, as well as disorders of the hematopoietic system, including defects in immune competency and inflammation. Protein, as well as, antibodies directed against the protein may show utility as a tumor marker and immunotherapy targets for the above listed tumors and tissues.

25

FEATURES OF PROTEIN ENCODED BY GENE NO: 122

The translation product of this gene shares sequence homology with an ATP synthase, a key component of the proton channel that is thought to be important in the translocation of protons across the membrane.

30 This gene is expressed primarily in T cell lymphoma.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, T cell lymphoma. Similarly, polypeptides and antibodies directed to these
35 polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or

lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to ATP synthase indicates that polynucleotides and polypeptides corresponding to this gene are useful for the treatment of defects in proton transport, homeostasis, and metabolism, as well as the diagnosis and treatment of lymphoma. Because the gene is expressed in cells of lymphoid origin, the natural gene product may be involved in immune functions. Therefore it may be also used as an agent for immunological disorders including arthritis, asthma, immune deficiency diseases such as AIDS, and leukemia

FEATURES OF PROTEIN ENCODED BY GENE NO: 123

This gene maps to chromosome 15, and therefore, may be used as a marker in linkage analysis for chromosome 15.

This gene is expressed primarily in a variety of fetal tissues, including fetal liver, lung, and spleen, and to a lesser extent in a variety of blood cells, including eosinophils and T cells.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, cancer (abnormal cell proliferation); T cell lymphomas; and hematopoietic disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the fetus and immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for the treatment and diagnosis of conditions involving cell proliferation. Expression of this gene in fetal tissues, as well as in a variety of blood cell lineages indicates that it may play a role in either cellular proliferation; apoptosis; or cell survival. Thus it may be useful in the management and

treatment of a variety of cancers and malignancies. In addition, its expression in blood cells suggest that it may play additional roles in hematopoietic disorders and conditions, and could be useful in treating diseases involving autoimmunity, immune modulation, immune surveillance, and inflammation..

5

FEATURES OF PROTEIN ENCODED BY GENE NO: 124

This gene is expressed primarily in placenta and to a lesser extent in pineal gland and rhabdomyosarcoma.

Therefore, polynucleotides and polypeptides of the invention are useful as
10 reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, developmental, endocrine, and female reproductive disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For
15 a number of disorders of the above tissues or cells, particularly of the [insert system where a related disease state is likely, e.g., immune], expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having
20 such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 357 as residues: Leu-69 to Val-76.

The tissue distribution indicates that polynucleotides and polypeptides
25 corresponding to this gene are useful for diagnosis and treatment of disorders in development. Protein, as well as, antibodies directed against the protein may show utility as a tumor marker and immunotherapy targets for the above listed tumors and tissues.

30 FEATURES OF PROTEIN ENCODED BY GENE NO: 125

This gene is expressed primarily in benign prostatic hyperplasia.

Therefore, polynucleotides and polypeptides of the invention are useful as
reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of benign prostatic hyperplasia. Similarly,
35 polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the reproductive

system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment and diagnosis of benign prostatic hyperplasia. Protein, as well as, antibodies directed against the protein may show utility as a tumor marker and immunotherapy targets for the above listed tumors and tissues.

FEATURES OF PROTEIN ENCODED BY GENE NO: 126

This gene is expressed primarily in apoptotic T-cells and to a lesser extent in suppressor T cells and ulcerative colitis.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, diseases involving premature apoptosis, and immunological and gastrointestinal disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment and diagnosis of disorders involving inappropriate levels of apoptosis, especially in immune cell lineages. Because the gene is expressed in cells of lymphoid origin, the natural gene product may be involved in immune functions. Therefore it may be also used as an agent for immunological disorders including arthritis, asthma, immune deficiency diseases (such as AIDS), and leukemia.

FEATURES OF PROTEIN ENCODED BY GENE NO: 127

This gene is expressed primarily in Raji cells.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, inflammation and T cell autoimmune disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 360 as residues: Asp-23 to Gly-29.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment and diagnosis of inflammation and T cell autoimmune disorders. Because the gene is expressed in cells of lymphoid origin, the natural gene product may be involved in immune functions. Therefore it may be also used as an agent for immunological disorders including arthritis, asthma, immune deficiency diseases (such as AIDS), and leukemia.

FEATURES OF PROTEIN ENCODED BY GENE NO: 128

The translation product of this gene shares sequence homology with an *C. elegans* coding region C47D12.2 of unknown function (See Accession No. gnllPIDe348986). One embodiment for this gene is the polypeptide fragments comprising the following amino acid sequence: EDDGFNRSIHEVILKNITWY SERVLTEISLGSLLLLVVIRTIQYNMTRTRDKYLHTNCLAALANMSAQFRSLHQY AAQRIISLFSLLSKKHNVLEQATQSLRGSLSNDVPLPDYAQDLNVIEEVIRMM LEIINSCLTNSLHHNPNLVALLYKRDLFEQFRTHPSFQDIMQNIDLVISFFSSRLL QAGS (SEQ ID NO:657); EDDGFNRSIHEVILKNITWYSERVLTEISLGSLLLLVV (SEQ ID NO:658); RTIQYNMTRTRDKYLHTNCLAALANMSAQFRSLHQYAAQ RIISLFSLLSKKHNVLEQATQSLRGSLSNDVPLPDY AQD (SEQ ID NO:661); SCLTNSLHHNPNLVALLYKRDLFEQFRTHPSFQD IMQNIDLVISFFSSRLLQAGS (SEQ ID NO:660). An additional embodiment is the polynucleotide fragments encoding these polypeptide fragments. This gene maps to

chromosome 18, and therefore, may be used as a marker in linkage analysis for chromosome 18.

This gene is expressed primarily in smooth muscle and to a lesser extent in fetal liver.

5 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, atherosclerosis and other cardiovascular and hepatic disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing
10 immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the circulatory system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample
15 taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of circulatory system
20 disorders such as atherosclerosis, hypertension, and thrombosis. In addition, the tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for the detection and treatment of liver disorders and cancers (e.g. hepatoblastoma, jaundice, hepatitis, liver metabolic diseases and conditions that are attributable to the differentiation of hepatocyte progenitor cells). In addition the
25 expression in fetus would suggest a useful role for the protein product in developmental abnormalities, fetal deficiencies, pre-natal disorders and various wound-healing models and/or tissue trauma.

FEATURES OF PROTEIN ENCODED BY GENE NO: 129

30 The translation product of this gene shares sequence homology with a ribosomal protein which is thought to be important in cellular metabolism, in addition to the *C.elegans* protein F40F11.1 which does not have a known function at the current time (See Accession No. gnllPIDle244552). Preferred polypeptide fragments comprise the following amino acid sequence:

35 MADIQTERAYQKQPTIFQNKKRVLLGETGKEKLPRVTNKNIGLGFKDT
PRLLRGTYIDKKCPFTGNVSIRGRILSGVVTQDEDAEDHCHPPRLSALHPQVQ
PLREAPQEHVCTPVPL LQGRPDR (SEQ ID NO:662); MKMQRTIVIRRDYLH

YIRKYNRFEKRRHKNMSVHLSPCFRDVQIGDIVTVGECRPLSKTVRFNVLKVTK
 AAGTKKQFQKF (SEQ ID NO:663); MADIQTERAYQKQPTIFQNKRRVLLGET
 GK (SEQ ID NO:664); HCHPPRLSALHPQVQPLREAPQEHVCTPVPL LQGRPDR
 (SEQ ID NO:666); NIGLGFKDTPRLLRGTYIDKKCPFTGNVSIRGRILSGVVTQ
 5 (SEQ ID NO:669); MKMQRTIVIRRDYLYIRKYNRFEKRRHKNMSVHLSP (SEQ
 ID NO:667); CFRDVQIGDIVTVGECRPLSKTVRFNVLKVTKAAGTKKQFQKF
 (SEQ ID NO:668). Also preferred are polynucleotide fragments encoding these
 polypeptide fragments.

10 This gene is expressed primarily in Wilm's tumor and to a lesser extent in
 thymus and stromal cells.

Therefore, polynucleotides and polypeptides of the invention are useful as
 reagents for differential identification of the tissue(s) or cell type(s) present in a
 biological sample and for diagnosis of diseases and conditions, which include, but are
 not limited to, diseases affecting RNA translation. Similarly, polypeptides and
 15 antibodies directed to these polypeptides are useful in providing immunological probes
 for differential identification of the tissue(s) or cell type(s). For a number of disorders
 of the above tissues or cells, particularly of the Wilm's tumors, expression of this gene
 at significantly higher or lower levels may be routinely detected in certain tissues (e.g.,
 cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial
 20 fluid or spinal fluid) or another tissue or cell sample taken from an individual having
 such a disorder, relative to the standard gene expression level, i.e., the expression level
 in healthy tissue or bodily fluid from an individual not having the disorder. Preferred
 epitopes include those comprising a sequence shown in SEQ ID NO: 362 as residues:
 Thr-11 to Asp-20.

25 The tissue distribution and homology to a ribosomal protein indicates that
 polynucleotides and polypeptides corresponding to this gene are useful for diseases
 affecting RNA translation.

FEATURES OF PROTEIN ENCODED BY GENE NO: 130

30 The translation product of this gene shares sequence homology with a yeast
 DNA helicase which is thought to be important in global transcriptional regulation (See
 Accession No. gnllPIDle243594). One embodiment for this gene is the polypeptide
 fragments comprising the following amino acid sequence: IFYDSDWNPTVDQQA
 MDRAHRLGQTKQVTVYRLICKGTIEERILQRAKEKSEIQRMVISG (SEQ ID
 35 NO:670); TRMIDLLEEYMVYRKHTYXRLDGSSKISERRDMVADFQNRNDI
 FVLLSTRAGGLGINLTAXDTVHF (SEQ ID NO:671); TRMIDLLEEYMVYRK
 HTYXRLDGSSKISERRDM (SEQ ID NO:674); RRD MVADFQNRNDIFVLL

STRAGGLGINLTAXDTVHF (SEQ ID NO:675) , IFYDSDWNPTVDQQAMD
RAHRLGQTKQVTYRLICKG (SEQ ID NO:676); RLICKGTIEERILQRAK
EKSEIQRMVISG (SEQ ID NO:678). An additional embodiment is the polynucleotide
fragments encoding these polypeptide fragments.

5 This gene is expressed primarily in amygdala.

 Therefore, polynucleotides and polypeptides of the invention are useful as
reagents for differential identification of the tissue(s) or cell type(s) present in a
biological sample and for diagnosis of diseases and conditions, which include, but are
not limited to, diseases and disorders of the brain. Similarly, polypeptides and
10 antibodies directed to these polypeptides are useful in providing immunological probes
for differential identification of the tissue(s) or cell type(s). For a number of disorders
of the above tissues or cells, particularly of the central nervous system, expression of
this gene at significantly higher or lower levels may be routinely detected in certain
tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma,
15 urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an
individual having such a disorder, relative to the standard gene expression level, i.e.,
the expression level in healthy tissue or bodily fluid from an individual not having the
disorder.

 The tissue distribution and homology to a DNA helicase indicates that
20 polynucleotides and polypeptides corresponding to this gene are useful for diseases
affecting RNA transcription, particularly developmental disorders and healing wounds
since the later are though to approximate developmental transcriptional regulation.

FEATURES OF PROTEIN ENCODED BY GENE NO: 131

25 This gene is expressed primarily in prostate and to a lesser extent in amygdala
and pancreatic tumors.

 Therefore, polynucleotides and polypeptides of the invention are useful as
reagents for differential identification of the tissue(s) or cell type(s) present in a
biological sample and for diagnosis of diseases and conditions, which include, but are
30 not limited to, prostate enlargement and gastrointestinal disorders, particularly of the
pancreas and gall bladder. Similarly, polypeptides and antibodies directed to these
polypeptides are useful in providing immunological probes for differential identification
of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells,
particularly of the reproductive system, expression of this gene at significantly higher or
35 lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded
tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or
another tissue or cell sample taken from an individual having such a disorder, relative to

the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment and diagnosis of prostate diseases, including benign prostatic hyperplasia and prostate cancer. In addition, the tissue distribution in tumors of the pancreas indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and intervention of these tumors, in addition to other tissues where expression has been indicated. Protein, as well as, antibodies directed against the protein may show utility as a tumor marker and/or immunotherapy targets for the above listed tumors and tissues.

FEATURES OF PROTEIN ENCODED BY GENE NO: 132

This gene is expressed primarily in adult lung and to a lesser extent in hypothalamus.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, pulmonary diseases and neurological disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the pulmonary and respiratory systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of pulmonary and respiratory disorders such as emphysema, pneumonia, and pulmonary edema and emboli. In addition, the tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for the detection/treatment of neurodegenerative disease states and behavioral disorders such as Alzheimer's Disease, Parkinson's Disease, Huntington's Disease, schizophrenia, mania, dementia, paranoia, obsessive compulsive disorder and panic disorder. In addition, the gene or gene product may also play a role in the treatment and/or detection of developmental

disorders associated with the developing embryo, sexually-linked disorders, or disorders of the cardiovascular system.

FEATURES OF PROTEIN ENCODED BY GENE NO: 133

5 This gene is expressed primarily in human liver.

 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, cirrhosis of the liver and other hepatic disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the digestive system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, 10 urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

 The tissue distribution indicates that polynucleotides and polypeptides 20 corresponding to this gene are useful for diagnosis and treatment of liver disorders such as cirrhosis, jaundice, and Hepatitis. Protein, as well as, antibodies directed against the protein may show utility as a tumor marker and/or immunotherapy targets for the above listed tissues.

25 FEATURES OF PROTEIN ENCODED BY GENE NO: 134

 This gene is expressed primarily in fetal kidney and to a lesser extent in fetal liver and spleen.

 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, development and regeneration of liver and kidney and immunological disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of 30 the digestive and excretory systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or 35

another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 367 as residues: Pro-70 to Arg-77, Tyr-
5 102 to Thr-107.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of diseases of the kidney and liver, such as cirrhosis, kidney failure, kidney stones, and liver failure, hepatoblastoma, jaundice, hepatitis, liver metabolic diseases and conditions that are
10 attributable to the differentiation of hepatocyte progenitor cells. In addition the expression in fetus would suggest a useful role for the protein product in developmental abnormalities, fetal deficiencies, pre-natal disorders and various wound-healing models and/or tissue trauma.

15 **FEATURES OF PROTEIN ENCODED BY GENE NO: 135**

This gene is expressed primarily in brain, bone marrow, and to a lesser extent in placenta, T cell, testis and neutrophils.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a
20 biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, neurodegenerative and immunological diseases and cancer. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the nervous and
25 immune systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an
30 individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 368 as residues: Met-1 to His-6.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for the detection/treatment of neurodegenerative disease states and behavioral disorders such as Alzheimer's Disease, Parkinson's
35 Disease, Huntingtons Disease, schizophrenia, mania, dementia, paranoia, obsessive compulsive disorder and panic disorder. In addition, the gene or gene product may also

play a role in the treatment and/or detection of developmental disorders associated with the developing embryo, or sexually-linked disorders.

FEATURES OF PROTEIN ENCODED BY GENE NO: 136

- 5 Translation product of this gene is homologous to the human WD repeat protein HAN11. Preferred polypeptide fragments comprise the following amino acid sequence:
- MSLHGKRKEIYKYEAPWTVYAMNWSVRPDKRFRLLALGSFVEEYNNKVQLVG
LDEESSEFICRNTFDHPYPTTKLMWIPDTKGVYPDLLATSGDYLRVWRVGETET
10 RLECLLNNNKNSDFCAPLTSFDWNEVDPYLLGTSSIDTTCTIWGLETGQVLGRV
NLVSGHVKTQLIAHDKEVYDIAFSRAGGGRDMFASVGADGSVRMFDLRHLEH
STIIYEDPQHHPLLRLCWNKQDPNYLATMAMDGMEVVILDVRVPAHLXPGTTIE
HVSMAILGPHIHPATSALQRM TTRLSSGTSSKCPEPLRTL SWPTQLXGEINNVQ
WASTQPELSPSATTTAWRYSECSVGGAVPTRQGLLYFLPLPHPQS (SEQ ID
15 NO:679); MSLHGKRKEIYKYEAPWTVYAMNWSVRPDKRFRLLALGSFV
EEYNNKVQLVGLDEESSEFICRNTFDHPYPTTKLMWIPDTKGVYPDLLATSGDY
LRVWRVGETETRLECLLNNNKNSDFCAPLTSFDWNEVDPYLL (SEQ ID
NO:680); SFDWNEVDPYLLGTSSIDTTCTIWGLETGQVLGRVNLVSGHVK
TQLIAHDKEVYDIAFSRAGGGRDMFASVGADGSVRMFDLRHLEHSTIIYEDPQH
20 HPLLRLCWNKQDPNYLATMAMDGMEVVILDVRVPAHLXPGTTI (SEQ ID
NO:681); VGADGSVRMFDLRHLEHSTIIYEDPQHHPLLRLCWNKQDPNYLA
TMAMDGMEVVILDVRVPAHLXPGTTIEHVSMAILGPHIHPATSALQRM TTRL
SGTSSKCPEPLRTL SWPTQLXGEINNVQWASTQPELSPSATTTAWRYSECSV
GAVPTRQGLLYFLPLPHPQS (SEQ ID NO:682). Also preferred are polynucleotide
25 fragments encoding these polypeptide fragments.

This gene is expressed primarily in placenta, embryo, T cell and fetal lung and to a lesser extent in endothelial, tonsil and bone marrow.

- Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a
30 biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, immunological and developmental diseases in addition to cancers. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the
35 immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or

cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 369 as residues: Gly-19 to Gln-28, Pro-36 to Phe-42.

5 The tissue distribution in tumors of colon, ovary, and breast origins indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and intervention of these tumors, in addition to other tumors where expression has been indicated. Protein, as well as, antibodies directed against the protein may show utility as a tumor marker and/or immunotherapy targets for the above
10 listed tumors and tissues. Because the gene is expressed in cells of lymphoid origin, the natural gene product may be involved in immune functions. Therefore it may be also used as an agent for immunological disorders including arthritis, asthma, immune deficiency diseases such as AIDS, and leukemia.

15 **FEATURES OF PROTEIN ENCODED BY GENE NO: 137**

This gene is expressed primarily in TNF and INF induced epithelial cells, T cells and kidney.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a
20 biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, inflammatory conditions particularly inflammatory reactions in the kidney. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of renal
25 system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an
30 individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 370 as residues: Thr-67 to Gly-72, Gln-132 to Ala-145, Arg-150 to Pro-157.

The tissue distribution indicates that the protein products of this gene are useful for treating the damage caused by inflammation of the kidney.

35

FEATURES OF PROTEIN ENCODED BY GENE NO: 138

This gene maps to chromosome 1, and therefore, may be used as a marker in linkage analysis for chromosome 1 (See Accession No. D63485).

5 This gene is expressed primarily in breast cancer and colon cancer and to a lesser extent in thymus and fetal spleen.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, cancers, especially of the breast and colon tissues. Similarly,
10 polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum,
15 plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution in tumors of colon and breast origins indicates that
20 polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and intervention of these tumors, in addition to other tumors where expression has been indicated. Protein, as well as, antibodies directed against the protein may show utility as a tumor marker and/or immunotherapy targets for the above listed tumors and tissues.

25 FEATURES OF PROTEIN ENCODED BY GENE NO: 139

This gene maps to chromosome 17, and therefore, can be used as a marker for linkage analysis from chromosome 17.

This gene is expressed primarily in CD34 positive cells, and to lesser extent in activated T-cells and neutrophils.

30 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, immunologically related diseases and hematopoietic disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing
35 immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system and hematopoietic system, expression of this gene at significantly higher or lower levels

may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution in CD34, T-cell and neutrophils indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment and diagnosis of hematopoietic disorders and immunologically related diseases, such as anemia, leukemia, inflammation, infection, allergy, immunodeficiency disorders, arthritis, asthma, immune deficiency diseases such as AIDS.

FEATURES OF PROTEIN ENCODED BY GENE NO: 140

This gene was recently cloned by another group, who called the gene KIAA0313 gene. (See Accession No. d1021609.) Preferred polypeptide fragments comprise the amino acid sequence:

LYATATVISSPSTEXLSQDQGDRA SLDAADSGRGSWTSCSSGSHDNIQTIQ
HQRSWETLPFGHTHFDYSGDPAGLWASSSHMDQIMFSDHSTKYNRQNSRES
LEQAQSRASWASSTGYWGEDSEGDTGTIKRRGGKDVSEAESSSLTSVTTEETK
PVPMPAHIAVASSTTKGLIARKEGRYREPPPTPPGYIGIPITDFPEGHSH PARKP
PDYNVALQR SRMVARSSDTAGPSSVQQPHGHPTSSRPVNKPQWHKXNESDPR
LAPYQSQGFSTEEDEDEQVSAV (SEQ ID NO:683); HMDQIMFSDHSTKYNRQ
NQSRESLEQAQSRASWASSTGYWGE (SEQ ID NO:684); SVTTEETKPVMP
AHIAVASSTTKGLIARKEGRYREPPPTPPGYIGIPITD (SEQ ID NO:685); and
VALQR SRMVARSSDTAGPSSVQQPHGHPTSSRPVNKPQW

HKXNESDPR LAPYQSQGF (SEQ ID NO:686). Also preferred are polynucleotide fragments encoding these polypeptide fragments. This gene maps to chromosome 4, and therefore, may be used as a marker in linkage analysis for chromosome 4 (See Accession No. AB002311).

This gene is expressed primarily in ovarian cancer, tumors of the Testis, brain, and colon.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, ovarian, testicle, brain and colon cancers. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the male and female reproductive systems,

expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e.,
5 the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution in tumors of colon, ovary, testis, and brain origins indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and intervention of these tumors, in addition to other tumors where
10 expression has been indicated. Protein, as well as, antibodies directed against the protein may show utility as a tumor marker and/or immunotherapy targets for the above listed tumors and tissues.

FEATURES OF PROTEIN ENCODED BY GENE NO: 141

15 This gene is expressed primarily in spleen and colon cancer.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, colon cancer and immunological disorders. Similarly, polypeptides and
20 antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the gastrointestinal tract and immune systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g.,
25 serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution in tumors of colon, ovary, and breast origins indicates
30 that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and intervention of these tumors, in addition to other tumors where expression has been indicated. Protein, as well as, antibodies directed against the protein may show utility as a tumor marker and/or immunotherapy targets for the above listed tumors and tissues.

35

FEATURES OF PROTEIN ENCODED BY GENE NO: 142

Translation product is homologous to T cell translocation protein, a putative zinc finger factor (See Accession No. 340454), as well as to the G-protein coupled receptor TM5 consensus polypeptide (See Accession No. R50734). Preferred polypeptide fragments comprise the following amino acid sequence:

5 CLLFVVFVSLGMRCLFWTIVYNVLYLKHKCNVLLCYHLCSI (SEQ ID NO:687);
 ACSKLIPAFEMVMRAKDNVYHLDCFACQLCNQRXCVGDKFFLKNNXXLCQT
 DYEEGLMKEGYAPXVR (SEQ ID NO:688). Also preferred are polynucleotide fragments encoding these polypeptide fragments.

10 This gene is expressed primarily in fetal brain.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, neurological disorders including brain cancer. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the Central Nervous System, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

15 and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the Central Nervous System, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

20 plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for the detection/treatment of neurodegenerative disease states and behavioral disorders such as Alzheimer's Disease, Parkinson's Disease, Huntingtons Disease, schizophrenia, mania, dementia, paranoia, obsessive compulsive disorder and panic disorder. In addition, the gene or gene product may also play a role in the treatment and/or detection of developmental disorders associated with the developing embryo.

25 corresponding to this gene are useful for the detection/treatment of neurodegenerative disease states and behavioral disorders such as Alzheimer's Disease, Parkinson's Disease, Huntingtons Disease, schizophrenia, mania, dementia, paranoia, obsessive compulsive disorder and panic disorder. In addition, the gene or gene product may also play a role in the treatment and/or detection of developmental disorders associated with the developing embryo.

30 the developing embryo.

FEATURES OF PROTEIN ENCODED BY GENE NO: 143

Translation product for this gene has significant homology to the Fas ligand, which is a cysteine-rich type II transmembrane protein/tumor necrosis factor receptor homolog. Mutations within this protein have been shown to result in generalized lymphoproliferative disease leading to the development of lymphadenopathy and autoimmune disease (See Medline Article No. 94185175). Preferred polypeptide

35 homolog. Mutations within this protein have been shown to result in generalized lymphoproliferative disease leading to the development of lymphadenopathy and autoimmune disease (See Medline Article No. 94185175). Preferred polypeptide

fragments comprise the following amino acid sequence:

SALSEPGAPDRRRPCPESVPRRPDDEQWPPPTALCLDVAPLPPSS (SEQ ID NO:689). Also preferred are polynucleotide fragments encoding these polypeptide fragments (See Accession No. 473565).

5 This gene is expressed primarily in osteoblasts, lung, and brain.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, osteoblast-related, pulmonary, neurological, and immunological
10 diseases. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the skeletal and nervous systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded
15 tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 376 as residues: Trp-33 to Thr-40, Lys-
20 45 to Ile-63.

The tissue distribution in osteoblasts, lung, and brain combined with its homology to the Fas ligand indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and intervention of these tumors, in addition to other tumors where expression has been indicated. Protein, as well as,
25 antibodies directed against the protein may show utility as a tumor marker and/or immunotherapy targets for the above listed tumors and tissues. Because the Fas ligand gene is known to be expressed in cells of lymphoid origin, the natural gene product may be involved in immune functions. Therefore it may be also used as an agent for immunological disorders including asthma, immune deficiency diseases such as AIDS
30 and leukemia, and various autoimmune disorders including lupus and arthritis.

FEATURES OF PROTEIN ENCODED BY GENE NO: 144

This gene shares sequence homology with a 21.5 KD transmembrane protein in the SEC15-SAP4 intergenic region of yeast. (See Accession No. 1723971.) Preferred
35 polypeptide fragments comprise the amino acid sequence:

AHASESGERWWACCGVRFGLRSIEAIGRSCCHDGPGLVANRGRFRKWAIEL
SGPGGGSRGRSDRSGQGDSLYPVGYLDKQVPDTSVQETDRILVEKRCWDIAL

GPLKQIPMNLFIMYMAGNTISIFPTMMVCMMAWRPIQALMAISATFKMLESSSQ
 KFLQGLVYLIGNLMGLALAVYKCQSMGLLPHTHASDWLAFIEPPERMEFSGG
 GLLL (SEQ ID NO:691); PVGYLDKQVPDTSVQETDRILVEKRCWDIALGPLKQ
 IPMNLFI (SEQ ID NO:693); and ATFKMLESSSQKFLQGLVYLIGNLMGLALAV
 5 YKCQSMGLLPHTHASD (SEQ ID NO:692). Also preferred are polynucleotide
 fragments encoding these polypeptide fragments.

This gene is expressed primarily in osteoclastoma, hemangiopericytoma, liver,
 lung.

Therefore, polynucleotides and polypeptides of the invention are useful as
 10 reagents for differential identification of the tissue(s) or cell type(s) present in a
 biological sample and for diagnosis of diseases and conditions, which include, but are
 not limited to, osteoclastoma, hemangiopericytoma, liver and lung tumors. Similarly,
 polypeptides and antibodies directed to these polypeptides are useful in providing
 immunological probes for differential identification of the above tissue(s) or cell
 15 type(s). For a number of disorders of the above tissues or cells, particularly of the lung
 and liver systems, expression of this gene at significantly higher or lower levels may be
 routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily
 fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or
 cell sample taken from an individual having such a disorder, relative to the standard
 20 gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an
 individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides
 corresponding to this gene are useful for diagnosing osteoclastoma,
 hemangiopericytoma, liver and lung tumors.

25

FEATURES OF PROTEIN ENCODED BY GENE NO: 145

Translation product of this gene shares homology with the glucagon-69 gene
 which may indicate this gene plays a role in regulating metabolism. (See Accession No.
 A60318) One embodiment for this gene is the polypeptide fragments comprising the
 30 following amino acid sequence:
 PTTKLDIMEKKKKHIQIRFPSFYHKLVDGRMRSKRETRREDSDTKHNL (SEQ ID
 NO:694). An additional embodiment is the polynucleotide fragments encoding these
 polypeptide fragments.

This gene is expressed primarily in brain, kidney, colon, and testis.

35 Therefore, polynucleotides and polypeptides of the invention are useful as
 reagents for differential identification of the tissue(s) or cell type(s) present in a
 biological sample and for diagnosis of diseases and conditions, which include, but are

not limited to, brain, kidney, colon, and testicular cancer. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the male reproductive system, neurological, circulatory, and gastrointestinal systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution in tumors of brain, kidney, colon, and testis origins, indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and intervention of these tumors, in addition to other tumors where expression has been indicated. Protein, as well as, antibodies directed against the protein may show utility as a tumor marker and/or immunotherapy targets for the above listed tumors and tissues. The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for the detection/treatment of neurodegenerative disease states and behavioral disorders such as Alzheimer's Disease, Parkinson's Disease, Huntingtons Disease, schizophrenia, mania, dementia, paranoia, obsessive compulsive disorder and panic disorder. In addition, the gene or gene product may also play a role in the treatment and/or detection of developmental disorders associated with the developing embryo, sexually-linked disorders, or disorders of the cardiovascular system.

25 **FEATURES OF PROTEIN ENCODED BY GENE NO: 146**

The translation product of this gene shares sequence homology with goliath protein which is thought to be important in the regulation of gene expression during development. Protein may serve as a transcription factor. One embodiment for this gene is the polypeptide fragments comprising the following amino acid sequence:

30 TEHIIA VMITELRGKDILSYLEKNISVQMTIAVGTRMPPKNFSRGSLVFVSISFIV
 LMISSAWLIFYFIQKIRYTNARDRNQRR LGDAAKKAISKLTTRTVKKGDKETD
 PDFDHCAVCIESYKQNDVVRILPCKHVFHKSCVDPWLSEHCTCPMCKLNILKA
 LGIV (SEQ ID NO:695); TEHIIA VMITELRGKDILSYLEKNISVQMTIAVGTRMP
 PKNFSRGSLVFVSISFIVLM IISSAWLIFYF (SEQ ID NO:697); SISFIVLMISSA
 35 WLIFYFIQKIRYTNARDRNQRR LGDAAKKAISKLTTRTVKKGDKE (SEQ ID
 NO:698); VKKGDKETDPDFDHCAVCIESYKQNDVVRILPCKHVFHKSCVDP

WLSEHCTCPMCKLNILKALGIV (SEQ ID NO:699). An additional embodiment is the polynucleotide fragments encoding these polypeptide fragments (See Accession No. 157535). Moreover, another embodiment is the polynucleotide fragments encoding these polypeptide fragments:

- 5 MTHPGTEHIIAVMITELRGKDILSYLEKNISVQMTIAVGTRMPPKNFSRGS
LVFVSISFIVLMISSAWLIFYFIQKIRYTNARDRNQRR LGDAAKKAISKLTTRTV
KKGDKETDPDFDHCAVCIESYKQNDVVRILPCKHVFHKSCVDPWLSEHCTCP
MCKLNILKALGIVPNLPCTDNVAFDMERLTRTQAVNRRSALGDLAGDNSLGLE
PLRTSGISPLPQDGELTPRTGEINIAVTKEWFIIASFGLLSALTLCYMIIRATASLN
10 ANEVEWF (SEQ ID NO:696);MTHPGTEHIIAVMITELRGKDILSYLEKNISVQM
TIAVGTRMPPKNFSRGS LVFVSISFIVLMISSAWLIFYFIQKIRYTNARDRNQRR
LGDAAKKAISKLTTRT (SEQ ID NO:700); AAKKAISKLTTRTVKKGDKE
TDPDFDHCAVCIESYKQNDVVRILPCKHVFHKSCVDPWLSEHCTCPMCKLNIL
KALGIVPNLPC (SEQ ID NO:701); TQAVNRRSALGDLAGDNSLGLEPLRTSGI
15 SPLPQDGELTPRTGEINIAVTKEWFIIASFGLLSALTLCYMIIRATASLNANEVEW
F (SEQ ID NO:702); PLHGVADHLGCDPQTRFFVPPNIKQWIAL LQRGNCTF
KEKISR AAFHNAVAVVIYNNKSKEEPVTMTHPGTEHIIAVMITELRGKDILSYLE
KNISVQMTIAVGTRMPPKNFSRGS LVFVSISFIVLMISSAWLIFYFIQKIRYTN
ARDRNQRR LGDAAKKAISKLTTRTVKKGDKETDPDFDHCAVCIESYKQNDVVR
20 LPCKHVFHKSCVDPWLSEHCTCPMCKLNILKALGIVPNLPCTDNVAFDMERLT
RTQAVNRRSALGDLAGDNSLGLEPLRTSGISPLPQDGELTPRTGEINIAVTKEW
FIIASFGLLSALTLCYMIIRATASLNANEVEWF (SEQ ID NO:703); and
HGVADHLGCDPQTRFFVPPNIKQWIAL LQRGNCTFKEKISR AAFHNAVAVVIY
NNKSKEE (SEQ ID NO:704). An additional embodiment is the polynucleotide
25 fragments encoding these polypeptide fragments. When tested against Jurkat cell lines,
supernatants removed from cells containing this gene activated the GAS pathway.
Thus, it is likely that this gene activates immune cells through the JAKS/STAT signal
transduction pathway.

- 30 This gene is expressed primarily in macrophage, breast, kidney and to a lesser
extent in synovium, hypothalamus and rhabdomyosarcoma.

- Therefore, polynucleotides and polypeptides of the invention are useful as
reagents for differential identification of the tissue(s) or cell type(s) present in a
biological sample and for diagnosis of diseases and conditions, which include, but are
not limited to, schizophrenia and cancer. Similarly, polypeptides and antibodies directed
35 to these polypeptides are useful in providing immunological probes for differential
identification of the tissue(s) or cell type(s). For a number of disorders of the above
tissues or cells, particularly of the immune and neural system, expression of this gene at

significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to zinc finger protein indicates that polynucleotides and polypeptides corresponding to this gene are useful for the treatment of schizophrenia, kidney disease and other cancers. The tissue distribution in macrophage, breast, and kidney origins indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and intervention of tumors within these tissues, in addition to other tumors where expression has been indicated. Protein, as well as, antibodies directed against the protein may show utility as a tumor marker and/or immunotherapy targets for the above listed tumors and tissues. Because the gene is expressed in cells of lymphoid origin, the natural gene product may be involved in immune functions. Therefore it may be also used as an agent for immunological disorders including arthritis, asthma, immune deficiency diseases such as AIDS, and leukemia.

FEATURES OF PROTEIN ENCODED BY GENE NO: 147

The translation product of this gene shares sequence homology with HNP36 protein, an equilibrative nucleoside transporter, which is thought to be important in gene transcription as well as serving as an important component of the nucleoside transport apparatus (See Accession No. 1845345). One embodiment for this gene is the polypeptide fragments comprising the following amino acid sequence:

MSGQGLAGFFASVAMICAIASGSELSESAFGYFITACAVIILTIICYLGLPRLEFYR
 YYQQLKLEGPGEQETKLDLISKGEEPRAGKEESGVSVSNSQPTNESHSHKAILK
 NISVLAFSVCFITITIGMFPAVTVEVKSSIAGSSTWERYFIPVSCFLT FNIFDWLG
 RSLTAVFMWPGKDSRWLPSWXLARLVFVPLLLLCNIKPRRYLTVVFEHDAWFI
 FFMAAFASFNGYLASLCMCFGPKKVKPAEAETAEPSPSSCVVWHWGLFS
 PSCSGQLCDKGWTEGLPASLPVCLLPLPSARGDPEWSGGFFF (SEQ ID
 NO:705); MSGQGLAGFFASVAMICAIASGSELSESAFGYFITACAVIILTIIC
 YLGLPRLEFYRYYQQLKLE GPGEQETKLDLISKGEEPRAGKEESGVSVSNSQ
 PTNESHSHK (SEQ ID NO:706); SGVSVSNSQPTNESHSHKAILKNISVLAFSVCFI
 FTTITIGMFPAVTVEVKSSIAGSSTWERYFIPVSCFLT FNIFDWLGRS (SEQ ID
 NO:707), TIGMFPAVTVEVKSSIAGSSTWERYFIPVSCFLT FNIFDWLGRSLTAVF
 MWPGKDSRWLPSWXLARLVFVPLLLLCNIK PRRYLTVVFEHDA (SEQ ID
 NO:708); FGPKKVKPAEAETAEPSPSSCVVWHWGLFSPSCSGQLCDK

GWTEGLPASLPVCLLPSPARGDPEWSSGGFFF (SEQ ID NO:709). An additional embodiment is the polynucleotide fragments encoding these polypeptide fragments.

This gene is expressed primarily in eosinophils and aortic endothelium and to a lesser extent in umbilical vein endothelial cell and thymus.

5 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, hematopoietic disease. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential
10 identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the circular system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having
15 such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to HNP36 protein indicates that polynucleotides and polypeptides corresponding to this gene are useful for the treatment of blood neoplasias and other hematopoietic disease.

20

FEATURES OF PROTEIN ENCODED BY GENE NO: 148

This gene is expressed primarily in breast cancer cell lines, thymus stromal cells, and ovary.

25 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, endocrine and female reproductive system diseases including breast cancer. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell
30 type(s). For a number of disorders of the above tissues or cells, particularly of the endocrine system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard
35 gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for the diagnosis and treatment of endocrine disorders. In addition, the tissue distribution in tumors of thymus, ovary, and breast origins indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and intervention of these tumors, in addition to other tumors where expression has been indicated. Protein, as well as, antibodies directed against the protein may show utility as a tumor marker and/or immunotherapy targets for the above listed tumors and tissues

10 **FEATURES OF PROTEIN ENCODED BY GENE NO: 149**

Translation product of this gene has homology to pmt1 and pmt 2, two conserved schizosaccharomyces pombe genes. One embodiment for this gene is the polypeptide fragments comprising the following amino acid sequence:
 DDDGFEIVPIEDPAKHRILDPEGLALGAVIASSKKAKRDLIDNSFNRYTFNEDEG
 15 ELPEWVQEEKQHRIRQLPVGKKEVEHYRKRWREINARPIXXXXXXXXXXXXX
 XXXXXXLEQTRKKAEEVVNTVDIXRTRES (SEQ ID NO:710);
 DDDGFEIVPIEDPAKHRILDPEGLALGAVIASSKKAKRDLIDNSFNRYTF (SEQ
 ID NO:711); KRWREINARPIXXXXXXXXXXXXXXXXXXXXXLEQTRKKAEE
 AVVNTVDIXRTRES (SEQ ID NO:712). An additional embodiment is the
 20 polynucleotide fragments encoding these polypeptide fragments (See Accession No.
 e1216734).

This gene is expressed primarily in retina and ovary and to a lesser extent in breast cancer cell, epididymus and osteosarcoma.

Therefore, polynucleotides and polypeptides of the invention are useful as
 25 reagents for differential identification of the tissue(s) or cell type(s) present in a
 biological sample and for diagnosis of diseases and conditions, which include, but are
 not limited to, neuronal growth disorders, cancer and reproductive system disorders.
 Similarly, polypeptides and antibodies directed to these polypeptides are useful in
 providing immunological probes for differential identification of the tissue(s) or cell
 30 type(s). For a number of disorders of the above tissues or cells, particularly of the
 neural and reproductive system, expression of this gene at significantly higher or lower
 levels may be routinely detected in certain tissues (e.g., cancerous and wounded
 tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or
 another tissue or cell sample taken from an individual having such a disorder, relative to
 35 the standard gene expression level, i.e., the expression level in healthy tissue or bodily
 fluid from an individual not having the disorder. Preferred epitopes include those
 comprising a sequence shown in SEQ ID NO: 382 as residues: Met-1 to Gly-7.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for the diagnosis or treatment of reproductive system disease and cancers.

5 FEATURES OF PROTEIN ENCODED BY GENE NO: 150

One embodiment for this gene is the polypeptide fragments comprising the following amino acid sequence:

MIKDKGRARTALTSSQPAHLCPENPLLHLKAAVKEKKRNKKKKKTIGSPKRIQS
 PLNNKLLNSPAKTLPGACGSPQKLIDGFLKHEGPPAEKPLEELSASTSGVPGLS
 10 SLQSDPAGCVRPPAPNLAGAVEFNDVKTLLREWITTISDPM EEDILQVVKYCTD
 LIEEKDLEKLDLVIKYMKRLMQQSVE SVWNMAFD FILDNVQVVLQQTYGSTLK
 VT (SEQ ID NO:713); MIKDKGRARTALTSSQPAHLCPENPLLHLKAAVKE
 KKRNNKKKKKTIGSPKRIQ (SEQ ID NO:714); KRIQSPLNNKLLNSPAKT
 LPGACGSPQKLIDGFLKHEGPPAEKPLEELSASTSGVPGLSSLQSDPAGCVRPP
 15 APNLAGAVEFNDVKTLLREWITTISDPM (SEQ ID NO:715);
 TISDPM EEDILQVVKYCTDLIEEKDLEKLDLVIKYMKRLMQQSVE
 SVWNMAFD FILDNVQVVLQQTYGSTLKVT (SEQ ID NO:716). An additional
 embodiment is the polynucleotide fragments encoding these polypeptide fragments.

This gene is expressed primarily in 12 week embryo and to a lesser extent in
 20 hemangiopericytoma and frontal cortex.

Therefore, polynucleotides and polypeptides of the invention are useful as
 reagents for differential identification of the tissue(s) or cell type(s) present in a
 biological sample and for diagnosis of diseases and conditions, which include, but are
 not limited to, growth disorders and hemangiopericytoma. Similarly, polypeptides and
 25 antibodies directed to these polypeptides are useful in providing immunological probes
 for differential identification of the tissue(s) or cell type(s). For a number of disorders
 of the above tissues or cells, particularly of the circular and neural system, expression
 of this gene at significantly higher or lower levels may be routinely detected in certain
 tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma,
 30 urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an
 individual having such a disorder, relative to the standard gene expression level, i.e.,
 the expression level in healthy tissue or bodily fluid from an individual not having the
 disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID
 NO: 383 as residues: Leu-4 to Lys-11.

35 The tissue distribution indicates that polynucleotides and polypeptides
 corresponding to this gene are useful for the treatment of growth disorders,
 hemangiopericytoma and other soft tissue tumors.

FEATURES OF PROTEIN ENCODED BY GENE NO: 151

The translation product of this gene has been found to have homology to a human DNA mismatch repair protein PMS3. Preferred polypeptide fragments comprise the following amino acid sequence: FCHDCKFPEASPAMNCEP (SEQ ID NO:717). Also preferred are polynucleotide fragments encoding these polypeptide fragments (See Accession No. R95250).

This gene is expressed primarily in neutrophils.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, lymphoma, immunodeficiency diseases, and cancers resulting from genetic instability. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 384 as residues: Met-1 to Lys-6.

The tissue distribution in neutrophils and the sequence homology indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis of Hodgkin's lymphoma, since the elevated expression and secretion by the tumor mass may be indicative of tumors of this type. Additionally the gene product may be used as a target in the immunotherapy of the cancer. Because the gene is expressed in cells of lymphoid origin, the natural gene product may be involved in immune functions. Therefore it may be also used as an agent for immunological disorders including arthritis, asthma, immune deficiency diseases such as AIDS, and leukemia. Furthermore, its homology to a known DNA repair protein would suggest gene may be useful in establishing cancer predisposition and prevention in gene therapy applications.

FEATURES OF PROTEIN ENCODED BY GENE NO: 152

This gene is expressed primarily in neutrophils.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a

biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, infectious diseases and lymphoma. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for the treatment of inflammation and infectious diseases.

15 **FEATURES OF PROTEIN ENCODED BY GENE NO: 153**

One embodiment for this gene is the polypeptide fragments comprising the following amino acid sequence:

MASSVPAGGHTRAGGIFLIGKLDLEASLFKSFQWLPFVLRKKC
 NFFCWDSSAHSPLHPLSASCSAPACHASDTHLLYPSTRALCPSIFAWLVAPHS
 20 VFRTNAPGPTPSSQSSPVFPVFPVSFMALIVCXLVCC (SEQ ID NO:720);
 MASSVPAGGHTRAGGIFLIGKLDLEASLFKSFQWLPFVLRKKCNFFCWDSSAH
 SLPLHPLSASCSAPACHA (SEQ ID NO:721);FAWLVAHSVVFRTNAPGPTPS
 SQSSPVFPVFPVSFMALIVCXLVCC (SEQ ID NO:722). An additional embodiment
 is the polynucleotide fragments encoding these polypeptide fragments.

25 This gene is expressed primarily in neutrophils.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, inflammation and infectious disease. Similarly, polypeptides and
 30 antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial
 35 fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred

epitopes include those comprising a sequence shown in SEQ ID NO: 386 as residues: Ser-11 to Pro-17.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for the treatment of infectious diseases and inflammation.

FEATURES OF PROTEIN ENCODED BY GENE NO: 154

This gene is expressed in multiple tissues including ovary, uterus, adipose tissue, brain, and the liver.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, uterine, ovarian, brain, and liver cancer. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the female reproductive system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution of this gene indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnostic or therapeutic uses in the treatment of the female reproductive system, obesity, and liver disorders, particularly cancer in the above tissues.

FEATURES OF PROTEIN ENCODED BY GENE NO: 155

This gene maps to chromosome 3, and therefore, may be used as a marker in linkage analysis for chromosome 3 (See Accession No. D87452).

This gene is expressed in multiple tissues including brain, aortic endothelial cells, smooth muscle, pituitary, testis, melanocytes, spleen, neutrophils, and placenta.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, immunological disorders including immunodeficiencies, cancers of the brain and the female reproductive system, as well as cardiovascular disorders, such as

atherosclerosis and stroke. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the central nervous and immune systems, expression of this gene at

5 significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

10 The tissue distribution suggest that polynucleotides and polypeptides corresponding to this gene are useful in treatment/detection of disorders in the nervous system, including schizophrenia, neurodegeneration, neoplasia, brain cancer as well as cardiovascular and female reproductive disorders including cancer within the above tissues.

15 **FEATURES OF PROTEIN ENCODED BY GENE NO: 156**

The translation product of this gene shares sequence homology with the human gene encoding cytochrome b561 (See Accession No. P10897). Cytochrome b561 is a transmembrane electron transport protein that is specific to a subset of secretory vesicles

20 containing catecholamines and amidated peptides. This protein is thought to supply reducing equivalents to the intravesicular enzymes dopamine-beta-hydroxylase and alpha-peptide amidase. Preferred polypeptides of the invention comprise the amino acid sequence:

MAMEGYWRFLALLGSALLVGFLSVIFALVWVLHYREGLGWDGSALEFNWHP

25 VLMVTGFVFIQGIIVYRLPWTWKCSKLLMKSIHAGLNAVAAILAISVVAVFE
NHNVNNIANMYSLHSWVGLIAVICYLLQLLSGFSVFLLPWAPLSLRAFLMPIHV
YSGIVIFGTVIATALMGLTEKLIFSLRDPAYSTFPPEGVFVNTLGLLILVFGALIF
WIVTRPQWKRPKENSTILHPNGGTEQGARGSMPAYSGNNMDKSDSEL
NSEVAARKRNLALDEAGQRSTM (SEQ ID NO:724); as well as antigenic fragments

30 of at least 20 amino acids of this gene and/or biologically active fragments. Also preferred are polynucleotide fragments encoding these polypeptide fragments.

This gene is expressed primarily in anergic T-cells.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a

35 biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, immune system and metabolism related diseases. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological

probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, 5 urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

10 The tissue distribution indicates that the protein product or RNA of this gene is useful for treatment or diagnosis of immune system and metabolic diseases or conditions including Tay-Sachs disease, phenylketonuria, galactosemia, various porphyrias, and Hurler's syndrome.

FEATURES OF PROTEIN ENCODED BY GENE NO: 157

15 The translation product of this gene shares sequence homology with collagen which is important in mammalian development. This gene also shows sequence homology with bcl-2. (See Accession No. P80988.) Preferred polypeptide fragments comprise the amino acid sequence: PGRAGPSPGLSLQLPAEPGHPAGNLAPL 20 TSRPQPLCRIPAVPG (SEQ ID NO:725). Also preferred are polynucleotide sequences encoding this polypeptide fragment.

This gene is expressed primarily in HL-60 tissue culture cells and to a lesser extent in liver, breast, and uterus.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a 25 biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, immunological diseases, hereditary disorders involving the MHC class of immune molecules, as well as developmental disorders and reproductive disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell 30 type(s). For a number of disorders of the above tissues or cells, particularly of the immune and reproductive system expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to 35 the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those

comprising a sequence shown in SEQ ID NO: 390 as residues: Ser-39 to Gly-46, Leu-49 to Ala-62.

5 The tissue distribution and homology to collagen indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of hereditary MHC disorders and particularly autoimmune disorders including rheumatoid arthritis, lupus, scleroderma, and dermatomyositis, as well as many reproductive disorders, including cancer of the uterus, and breast tissues.

FEATURES OF PROTEIN ENCODED BY GENE NO: 158

10 This gene is expressed primarily in the amygdala region of the brain.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, a variety of brain disorders, particularly those effecting mood and personality. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the brain and central nervous system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

25 The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment and/or diagnosis of a variety of brain disorders, particularly bipolar disorder, unipolar depression, and dementia.

FEATURES OF PROTEIN ENCODED BY GENE NO: 159

30 This gene is expressed in a variety of tissues and cell types including brain, smooth muscle, kidney, salivary gland and T-cells.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, cancers of a variety of organs including brain, smooth muscle, kidney, salivary gland and T-cells and cardiovascular disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders

of the above tissues or cells, particularly of the central nervous, urinary, salivary, digestive, and immune systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or
5 another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution in brain, smooth muscle, and T-cells indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis of
10 various neurological, and cardiovascular disorders, but not limited to cancer within the above tissues. Additionally the gene product may be used as a target in the immunotherapy of the cancer. Because the gene is expressed in cells of lymphoid origin, the natural gene product may be involved in immune functions. Therefore it may be also used as an agent for immunological disorders including arthritis, asthma,
15 immune deficiency diseases such as AIDS, and leukemia.

FEATURES OF PROTEIN ENCODED BY GENE NO: 160

The translation product of this gene shares sequence homology with collagen which is thought to be important in cellular interactions, extracellular matrix formation,
20 and has been found to be an identifying determinant in autoimmune disorders. Moreover, this gene shows sequence homology with the yeast protein, Sls1p, an endoplasmic reticulum component, involved in the protein translocation process in Yeast *Yarrowia lipolytica*. (See Accession No. 1052828; see also J. Biol. Chem. 271, 11668-11675 (1996).) With mouse, this same region shows sequence homology with
25 the heavy chain of kinesin. (See Accession No. 2062607.) Recently, suppression of the heavy chain of kinesin was shown to inhibit insulin secretion from primary cultures of mouse beta-cells. (See Endocrinology 138 (5), 1979-1987 (1997).) Moreover, kinesin was found associated with drug resistance and cell immortalization. (See 468355.) Thus, it is likely that this gene also act as a genetic suppressor elements.

30 This gene is expressed primarily in the greater omentum and to a lesser extent in a variety of organs and cell types including gall bladder, stromal bone marrow cells, lymph node, liver, testes, pituitary, and thymus.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a
35 biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, disorders of the endocrine, gastrointestinal, and immunological systems, including autoimmune disorders and cancers in a variety of organs and cell types.

Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune and gastrointestinal systems, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 393 as residues: Asn-27 to Leu-47, Gln-81 to Lys-88, Asp-93 to Lys-102, Asn-107 to Leu-116, Met-129 to Glu-141, Glu-150 to Asp-157, Lys-176 to Glu-185, Glu-333 to Tyr-349, Cys-393 to Leu-403, Gln-423 to Gly-429.

The tissue distribution in within various endocrine and immunological tissues combined with the sequence homology to a conserved collagen motif indicates that polynucleotides and polypeptides corresponding to this gene are useful for the diagnosis of various autoimmune disorders including, but not limited to, rheumatoid arthritis, lupus erythematosus, scleroderma, dermatomyositis. Because the gene is expressed in cells of lymphoid origin, the natural gene product may be involved in immune functions. Therefore it may be also used as an agent for immunological disorders including arthritis, asthma, immune deficiency diseases such as AIDS, and leukemia.

FEATURES OF PROTEIN ENCODED BY GENE NO: 161

This gene has homology to the tissue inhibitor of metalloproteinase 2. Such inhibitors are vital to proper regulation of metalloproteins such as collagenases (See Accession No. P16368). In addition, this gene maps to chromosome 17, and therefore, may be used as a marker in linkage analysis for chromosome 17 (See Accession No. P16368).

This gene is expressed primarily in several types of cancer including osteoclastoma, chondrosarcoma, and rhabdomyosarcoma and to a lesser extent in several non-malignant tissues including synovium, amygdala, testes, placenta.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, various types of cancer, particularly cancers of bone and cartilage, as well as various autoimmune disorders. Similarly, polypeptides and antibodies directed

to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the musculoskeletal system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g.,
5 cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution in various cancers and the sequence homology to a
10 collagenase inhibitor indicates that polynucleotides and polypeptides corresponding to this gene are useful for detection of various autoimmune disorders such as rheumatoid arthritis, lupus, scleroderma, and dermatomyositis. Therefore it may be also used as an agent for immunological disorders including arthritis, asthma, immune deficiency diseases such as AIDS, and leukemia.

15

FEATURES OF PROTEIN ENCODED BY GENE NO: 162

This gene is homologous to the mitochondrial ATP6 gene and therefore is likely a homolog of this gene family (See Accession No. X76197).

This gene is expressed primarily in brain tissue.

20

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, a variety of brain disorders, including Down's syndrome, depression, Schizophrenia, and epilepsy. Similarly, polypeptides and antibodies directed to these
25 polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the central nervous system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal
30 fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution in brain tissue indicates this gene is useful for diagnosis of various neurological disorders including, but not limited to, brain cancer.
35 Additionally the gene product may be used as a target in the immunotherapy of cancer in the brain as well as for the diagnosis of metabolic disorders such as obesity Tay-Sachs disease, phenylketonuria and Hurler's Syndrome.

FEATURES OF PROTEIN ENCODED BY GENE NO: 163

This gene is expressed primarily in placenta, neutrophils, and microvascular endothelial cells and to a lesser extent in multiple tissues including brain, prostate, spleen, thymus, and bone.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, neutropenia and other diseases of the immune system. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution in placenta indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis various female reproductive disorders. Additionally the gene product may be used as a target in the immunotherapy of various cancers. Because the gene is expressed in some cells of lymphoid and endocrine origin, the natural gene product may be involved in immune functions and metabolism regulation, respectively. Therefore it may be also used as an agent for immunological disorders including arthritis, asthma, immune deficiency diseases such as AIDS, and leukemia.

FEATURES OF PROTEIN ENCODED BY GENE NO: 164

This gene is expressed primarily in neutrophils, monocytes, bone marrow, and fetal liver.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, immune system disorders including, but not limited to, autoimmune disorders such as lupus, and immunodeficiency disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders

of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having
 5 such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution in various immune system tissue indicates that polynucleotides and polypeptides corresponding to this gene are useful for the diagnosis of various immunological disorders such as Hodgkin's lymphoma, arthritis,
 10 asthma, immune deficiency diseases such as AIDS, and leukemia.

FEATURES OF PROTEIN ENCODED BY GENE NO: 165

The translation product of this gene shares sequence homology with dystrophin which is thought to be defective in both Duchene and Becker Muscular Dystrophy.
 15 Preferred polypeptide fragments comprise the following amino acid sequence:
 MKLLGECSSSIDSVKRLEHKLKEEEESLPGFVNLHSTETQTAGVIDRWELLQAQ
 ALSKELRMKQNLQKWQQFNSDLNSIWAWLGDTEEELEQLQRLELSTDIQTIELQ
 IKKLKELQKAVDHRKAIL SINLCSPEFTQADSKESRDLQDRLXQMNGRWDRV
 CSLLEEWRLGLQDALMQCQGFHEMSHGLLLMLENIDRRKNEIVPIDSNLDAEIL
 20 QDHHKQLMQIKHELLESQLRVASLQDMSCQLLVNAEGTDCLEAKEKVHVIGNR
 LKLLKEVSRHIKELEKLLDVSSSQDLSSWSSADELDTSGSVSPXSGRSTPNR
 QKTPRGKCSLSQPGPSVSSPHSRSTKGGSDSSLSEXPGRSGRGFLFRVLRAA
 LPLQLLLLLLIGLACL VPMSEEDYSCALSNNFARSFHPMLRYTNGPPPL (SEQ ID
 NO:726); MKLLGECSSSIDSVKRLEHKLKEEEESLPGFVNLHSTETQTAGVIDR
 25 WELLQAQALSKELRMKQNLQKWQQFNSDLNSIWAWLGDTEEELEQLQRLELS
 TDIQTIELQIK (SEQ ID NO:727); KLKELQKAVDHRKAIL SINLCSPEFTQADSK
 ESRDLQDRLXQMNGRWDRVCSLLEEWRLGLQDALMQCQGFHEMSHGLLLML
 ENIDRRKNEIVPIDSNLDAEILQDHHKQLMQIKHELLESQLRVASLQDMSCQL
 (SEQ ID NO:728); QDMSCQLLVNAEGTDCLEAKEKVHVIGNRLKLLKEVS
 30 RHIKELEKLLDVSSSQDLSSWSSADELDTSGSVSPXSGRSTPNRQKTPRGKCS
 LSQPGPSVSSPHS (SEQ ID NO:729); DSSLSEXPGRSGRGFLFRVLRAAL
 PLQLLLLLLIGLACL VPMSEEDYSCALSNNFARSFHPMLRYTNGPPPL (SEQ ID
 NO:730). Also preferred are polynucleotide fragments encoding these polypeptide
 fragments. Furthermore, this gene maps to chromosome 6, and therefore, may be used
 35 as a marker in linkage analysis for chromosome 6 (See Accession No. N62896).

This gene is expressed in numerous tissues including the heart, kidney, and brain.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, musculoskeletal disorders including Muscular Dystrophy and cardiovascular diseases. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the muscle tissues, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to dystrophin indicates that polynucleotides and polypeptides corresponding to this gene are useful for the diagnosis and treatment of Muscular Dystrophy and other muscle disorders.

FEATURES OF PROTEIN ENCODED BY GENE NO: 166

This gene is expressed primarily in human cerebellum.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, diseases of the central nervous system, including Alzheimer's Disease, Parkinson's Disease, ALS, and mental illnesses. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the central nervous system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 399 as residues: Pro-20 to Gly-26, Leu-37 to Pro-42, His-57 to Gly-63.

The tissue distribution indicates that the protein products of this gene are useful for treatment/diagnosis of diseases of the central nervous system and may protect or

enhance survival of neuronal cells by slowing progression of neurodegenerative diseases.

FEATURES OF PROTEIN ENCODED BY GENE NO: 167

5 Preferred polypeptides encoded by this gene comprise the following amino acid sequence:

MKLLICGNYLAPSHSESSRRCCLLCFYPLCLEINFGMKVFLSMPFLVLFQ

SLIQED (SEQ ID NO:731). Polynucleotides encoding such polypeptides are also provided. This gene is believed to reside on chromosome 15. Therefore polynucleotides
10 derived from this gene are useful in linkage analysis as chromosome 15 markers.

This gene is expressed primarily in human testes tumor and to a lesser extent in normal human testes.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a
15 biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, diseases of the testes, particularly cancer, and other reproductive disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of
20 the male reproductive tissues, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily
25 fluid from an individual not having the disorder.

The tissue distribution indicates that the protein products of this gene are useful for treatment/diagnosis of testicular diseases including cancers.

FEATURES OF PROTEIN ENCODED BY GENE NO: 168

30 This gene is expressed primarily in fetal liver.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, conditions affecting hematopoietic development and metabolic diseases.
35 Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the

hepatic system, and fetal hematopoietic system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 401 as residues: His-7 to Trp-17, Leu-19 to Lys-27, Pro-33 to Gly-44, Lys-68 to Gly-74, Lys-85 to Cys-95.

The tissue distribution indicates that the protein products of this gene are useful for treatment/diagnosis of diseases of the developing liver and hematopoietic system, and act as a growth differentiation factor for hematopoietic stem cells.

FEATURES OF PROTEIN ENCODED BY GENE NO: 169

The polypeptide encoded by this gene is believed to be a membrane bound receptor. The extracellular domain of which is expected to consist of the following amino acid sequence:

RILLVKYSANEENKYDYLPPTTVNVCSELVKLVFCVLVSFCVIKKDHQSRNLKY
 ASWKEFSDFMKWSIPAFLYFLDNLIVFYVLSYLQPAMAVIFS NFSIITALLFRIV
 LKXRLNWIQWASLLTLFLSIVALTAGTKTLQHNLAGRGFHHDAFFSPSNSCLL
 FRNECPRKDNCTAKEWTFPEAKWNTTARVFSHIRLGMGHVLIIVQCFISSMANI
 YNEKILKEGNQLTEXIFIQNSKLYFFGILFNGLTLGLQRSNRDQIKNCGFFYGH
 S (SEQ ID NO:732). Thus, preferred polypeptides encoded by this gene comprise the extracellular domain as shown above. It will be recognized, however, that deletions of either end of the extracellular domain up to the first cysteine from the N-terminus and the first cysteine of the C-terminus, is expected to retain the biological functions of the full-length extracellular domain because the cysteines are thought to be responsible for providing secondary structure to the molecule. Thus, deletions of one or more amino acids from either end (or both ends) of the extracellular domain are contemplated. Of course, further deletions including the cysteines are also contemplated as useful as such polypeptides is expected to have immunological properties such as the ability to evoke and immune response. Polynucleotides encoding all of the foregoing polypeptides are provided.

This gene is expressed primarily in human osteoclastoma and to a lesser extent in hippocampus and chondrosarcoma.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are

not limited to, cancers, particularly those of the bone and connective tissues. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the skeletal system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 402 as residues: Met-1 to Cys-6, Ala-41 to Tyr-49, Lys-76 to Lys-84.

The tissue distribution indicates that the protein products of this gene are useful for diagnosis of cancers of the bone and connective tissues, and may act as growth factors for cells involved in bone or connective tissue growth.

FEATURES OF PROTEIN ENCODED BY GENE NO: 170

Preferred polypeptides encoded by this gene comprising the following amino acid sequence:

NSVPNLQTLAVLTEAIGPEPAIPRXPREPPVATSTPATPSAGPQPLPTGTV

LVPGGPAPPCLGEAWALLPPCRPSLTSCFWSRPSWKETGV (SEQ ID NO:733). Polynucleotides encoding such polypeptides are also provided herein.

This gene is expressed primarily in hematopoietic progenitor cells.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, diseases of the blood including cancer and autoimmune disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the blood/circulatory system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 403 as residues: Gln-4 to His-10, Pro-25 to His-32.

The tissue distribution indicates that the protein products of this gene are useful for diagnosis of diseases involving growth differentiation of hematopoietic cells.

FEATURES OF PROTEIN ENCODED BY GENE NO: 171

5 Preferred polypeptides encoded by this gene comprise the following amino acid sequences: ALQLAFYPDAVEEWLEENVHPSLQRLQXLLQDLSEVSAPP (SEQ ID NO:734); and/or CHPPALAGTLLRTPEGRAHARGLLLEAGGA (SEQ ID NO:735). Polynucleotides encoding such polypeptides are also provided. The protein product of this gene shares sequence homology with metallothionines. Thus, polypeptide encoded
10 by this gene are expected to have metallothionine activity, such activities are known in the art and described elsewhere herein.

This gene is expressed primarily in kidney cortex.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a
15 biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, diseases of the kidney including cancer and renal dysfunction. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the renal system,
20 expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the
25 disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 404 as residues: Ser-47 to Gln-52.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment/diagnosis of diseases of the kidney including kidney failure.

30

FEATURES OF PROTEIN ENCODED BY GENE NO: 172

This gene is expressed primarily in 12 week old early stage human.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a
35 biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, developmental abnormalities. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for

differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the developing embryo, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 405 as residues: Gln-31 to Thr-43, Gly-51 to Ser-58, Pro-65 to Pro-72.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for treatment/diagnosis of developmental problems with fetal tissue. The gene may be involved in vital organ development in the early stage, especially hematopoiesis, cardiovascular system, and neural development.

15 FEATURES OF PROTEIN ENCODED BY GENE NO: 173

The translation product of this gene shares sequence homology with TGN38, an integral membrane protein previously shown to be predominantly localized to the trans-Golgi network (TGN) of cells.

This gene is expressed primarily in developing embryo and to a lesser extent in cancer tissues including lymphoma, endometrial, prostate and colon.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, developmental abnormalities and cancer. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the developing fetus, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 406 as residues: His-65 to Ser-72, Pro-82 to Gly-91, Pro-98 to Glu-118, Ser-126 to Gly-166, Pro-180 to Asp-188, Tyr-209 to Lys-214, Gln-220 to Leu-228.

The tissue distribution and homology to an integral membrane protein indicates that polynucleotides and polypeptides corresponding to this gene are useful for

diagnosis of cancers and developmental abnormalities where aberrant expression relates to an abnormality.

FEATURES OF PROTEIN ENCODED BY GENE NO: 174

5 The translation product of this gene shares sequence homology with a dnaJ heat shock protein from E. coli which is allelic to sec63, a gene that affects transit of nascent secretory proteins across the endoplasmic reticulum in yeast.

 This gene is expressed primarily in Hodgkin's lymphoma and to a lesser extent in testes.

10 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, cancer. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification
15 of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to
20 the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 407 as residues: Thr-13 to Trp-21, Arg-74 to Asp-81.

 The tissue distribution and homology to dnaJ indicates that polynucleotides and
25 polypeptides corresponding to this gene are useful as a diagnostic for cancer including Hodgkin's lymphoma.

FEATURES OF PROTEIN ENCODED BY GENE NO: 175

 This gene is expressed primarily in endothelial cells and to a lesser extent in
30 bone marrow stromal cells.

 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, diseases involving angiogenic abnormalities including diabetic
35 retinopathy, macular degeneration, and other diseases including arteriosclerosis and cancer. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell

type(s). For a number of disorders of the above tissues or cells, particularly of the vascular system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that the protein products of this gene are useful for treating diseases where an increase or decrease in angiogenesis is indicated and as a factor in the wound healing process.

FEATURES OF PROTEIN ENCODED BY GENE NO: 176

The translation product of this gene shares sequence homology with MAT8 (mouse) which is thought to be important in regulating chloride conductance in cells (particularly in the breast) by modulating the response mediated by cAMP and protein kinase C to extracellular signals.

This gene is expressed primarily in amniotic cells and hematopoietic cells including macrophages, Neutrophils, T cells, TNF induced aortic endothelium and to a lesser extent in testes, TNF induced epithelial cells, and smooth muscle.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, inflammatory responses mediated by T cells, macrophages, and/or neutrophils particularly those involving TNF, and also cancer. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 409 as residues: Thr-19 to Ala-33, Leu-54 to Asp-82, Pro-89 to Ala-97, Pro-100 to Lys-125, Ser-127 to Phe-135, Gly-164 to Leu-169, Cys-173 to Arg-178.

The tissue distribution and homology to mat-8 indicates that polynucleotides and polypeptides corresponding to this gene are useful for modifying inflammatory

responses to cytokines such as TNF and thus modifying the duration and/or severity of inflammation. Polynucleotides and polypeptides derived from this gene are thought to be useful in the diagnosis and treatment of cancer.

5 FEATURES OF PROTEIN ENCODED BY GENE NO: 177

This gene is expressed primarily in endothelial cells.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are
 10 not limited to, vascular restenosis. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the vascular system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g.,
 15 cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides
 20 corresponding to this gene are useful for treating diseases associated with vascular response to injury such as vascular restenosis following angioplasty..

FEATURES OF PROTEIN ENCODED BY GENE NO: 178

One embodiment of the claimed invention comprises:

25 MRPDWKAGAGPGGPPQKPAPSSQRKPPARPSAAAAIAVAAAEERRLRQRN
 RLRLEEDKPAVERCLEELVFGDVENDEALLRRLRGPRVQEHEDSGDSEVENEAKGNFPPQKKPV
 WVDEEDEDEEMVDMNNRFRKDMMKNAESKLSKDNLKKRLKEEFQHAMGGVPAWAETTKRKTSSDDESEDEDDLLQRTGNFISTSTSLPRG
 ILKMKNQCQHANAEPTVARISICAVPSRCTDCDGCWD (SEQ ID NO:737); or
 30 CLEELVFGDVENDEALLRRLRGPRVQEHEDSGDSEVENEAKGNFPPQKKPV
 WVDEEDEDEEMVDMNNRFRKDMMKNAESKLSKDNLKKRLKEEFQHAMG
 GVPWAETTKRKTSSDDESEDEDDLLQRTGNFISTSTSLPRGILKMKNQCQHA
 NAERPTVARISICAVPSRCTDCDGC (SEQ ID NO: 738). LKEKIVRSFEVSPDGS
 FLLINGIAGYLHLLAMKTKELIGSMKINGRVAASTFSSDSKKVYASSGDGEVYV
 35 WDVNSRKCLNRFVDEGSLYGLSIATSRNGQYVACGSNCGVVNIYNQDSCLQE
 TNPKPIKAIMNLVTGVTSLTFNPTTEILAIASEKMKEAVRLVHLPSCVFSNFPVI
 KNKNISHVHTMDFSPRSGYFALGNEKGKALMYRLHHYSDF (SEQ ID NO:739);

and/or KINGRVAASTFSSDSKKVYASSGDGEVYVWDVNSRKCLNRFVDEGSL
YGLSIATSRNGQYVACGSNCGVVNIYNQDSCLQETNPKPIKAIMNLVTGVTSLT
FNPTTEILAIASEKMKEAVRLVHLPSCTVFSNFPVIKKNKNISHVHTMDFSPRSG
YFALGNEKGKAL (SEQ ID NO:740).

- 5 This gene is expressed primarily in epididymus and endometrial tumors and to a lesser extent in T cell lymphoma and cell lines derived from colon cancer.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, tumors of the reproductive organs including testis and endometrial cells. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the reproductive system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 411 as residues: Ser-67 to Lys-72, Val-87 to Leu-93, Tyr-128 to Pro-141, Asp-204 to Gly-210.

The tissue distribution indicates that the protein products of this gene are useful for treating tumors of the endometrium or epithelial tumors of the reproductive system.

25 **FEATURES OF PROTEIN ENCODED BY GENE NO: 179**

Preferred polypeptides encoded by this gene comprise the following amino acid sequence:

MRILQLILLALATGLVGGETRIIKGFECKLHSQPWQAALFEKTRLLCGATLIAPR
WLLTAAHCLKPRYIVHLGQHNLQKEEGCEQTRTATESFPHPGFNNSLPNKDH
30 RNDIMLVKMASPVSTITWAVRPLTLSSRCVTAGTSCSFPAGAARPDPSYACLTPC
DAPTSPSLSTRSVRTPTPATSQTPWCVPACRKGARTPARVTPGALWSVTSLFKA
LSPGARIRVRSPESLVSTRKSANMWTGSRRR (SEQ ID NO:741); ETRIIKGFEC
KLHSQPWQAALFEKTRLLCGATLIAPRWLLTAAHCLKPRYIVHLGQHNLQKEE
GCEQTRTATESFPHPGFNNSLPNKDHRNDIMLVKMASPVSTITWAVRPLTLSSR
35 CVTAGTSCSFPAGAARPDPSYACLTPCDAPTSPSLSTRSVRTPTPATSQTPWCVP
ACRKGARTPARVTPGALWSVTSLFKALSPGARIRVRSPESLVSTRKSANMWTG

SRRR (SEQ ID NO:742); or CKLHSQPWQAALFEKTRLLCGATLIAPRWLLT
AAHCLKPRYIVHLGQHNLQKEEGCEQTRTATESFPHPGFNS

(SEQ ID NO:743). The translation product of this gene shares sequence homology
with neuropsin a novel serine protease which is thought to be important in modulating
5 extracellular signaling pathways in the brain. Owing to the structural similarity to other
serine proteases the protein products of this gene are expected to have serine protease
activity which may be assayed by methods known in the art and described elsewhere
herein.

This gene is expressed primarily in endometrial tumor and to a lesser extent in
10 colon cancer, benign hypertrophic prostate, and thymus.

Therefore, polynucleotides and polypeptides of the invention are useful as
reagents for differential identification of the tissue(s) or cell type(s) present in a
biological sample and for diagnosis of diseases and conditions, which include, but are
not limited to, cancers of the endometrium or colon and benign hypertrophy of the
15 prostate. Similarly, polypeptides and antibodies directed to these polypeptides are
useful in providing immunological probes for differential identification of the tissue(s)
or cell type(s). For a number of disorders of the above tissues or cells, particularly of
the urogenital or reproductive systems, expression of this gene at significantly higher or
lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded
20 tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or
another tissue or cell sample taken from an individual having such a disorder, relative to
the standard gene expression level, i.e., the expression level in healthy tissue or bodily
fluid from an individual not having the disorder. Preferred epitopes include those
comprising a sequence shown in SEQ ID NO: 412 as residues: Gly-12 to Ser-22, Pro-
25 34 to Ser-53.

The tissue distribution and homology to serine proteases indicates that
polynucleotides and polypeptides corresponding to this gene are useful for diagnosing
or treating hyperproliferative disorders such as cancer of the endometrium or colon and
hyperplasia of the prostate.

30

FEATURES OF PROTEIN ENCODED BY GENE NO: 180

Preferred polypeptide encoded by this gene comprise the following amino acid
sequence: VLQGRYFSPILEMRRLRPEGXXNLPGGSRAQKEPRQDLTLVLWPHC
PHFAMTRSYPVKQCMVQGSFYCIFKGPVQNWNC (SEQ ID NO:744).

35 Polynucleotides encoding such polypeptide are also provided.

This gene is expressed primarily in fetal brain

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, identifying and expanding stem cells in the CNS. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the nervous system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that the protein products of this gene are useful for detecting and expanding stem cell populations in the (or of the) central nervous system.

FEATURES OF PROTEIN ENCODED BY GENE NO: 181

This gene is expressed primarily in early stage human brain and a stromal cell line.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, developmental abnormalities of the CNS. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the central nervous system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 414 as residues: Gln-42 to Gln-47, Gln-54 to Pro-60.

The tissue distribution indicates that the protein products of this gene play a role in the development of the central nervous system. Therefore this gene and its products

are useful for diagnosing or treating developmental abnormalities of the central nervous system.

FEATURES OF PROTEIN ENCODED BY GENE NO: 182

5 Preferred polypeptides encoded by this gene comprise the following amino acid sequence:

MPIIDQVNPELHDFMQSAEVTIFALSWLITWFGHVLSDFRHVVRLYDF
 FLACHPLMPIYFAAVIVLYREQEVLDCDCDMASVHHLLSQIPQDLPYETLISRXE
 TFLFSFPHPNLLGRPLPNSKLRGRQPLLSKTLSTWHQPSRGLIWCCGSGXRGLL
 10 RPEDRTKDVLTTPRTNRFVKLAVMGLTVALGAAALAVVKSALWAPKFQLQL
 FP (SEQ ID NO:745); or CPEFFIPATLPCPFVFAFTSEASSRAYLTQRGPGGLAQ
 NLMPLPVGFWMGSLPPPWCWRKWVSEACSCFC (SEQ ID NO:746) These

polypeptides are structurally similar to various TGF-beta family members. Thus, this polypeptide is expected to have a variety of activities in the modulation of cell growth
 15 and proliferation.

This gene is expressed primarily in osteoclastoma, microvascular endothelium, and bone marrow derived cell lines.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a
 20 biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, hematological diseases particularly involving aberrant proliferation of stem cells. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of
 25 the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an
 30 individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 415 as residues: Ser-33 to Ala-39.

The tissue distribution indicates that the protein products of this gene is useful for treating disorders of the progenitors of the immune system. Applications include in vivo expansion of progenitor cells, ex vivo expansion of progenitor cells, or the
 35 treatment of tumors of the circulatory system, such as lymphomas.

FEATURES OF PROTEIN ENCODED BY GENE NO: 183

This gene maps to chromosome 17 and therefore, polynucleotides of the invention can be used in linkage analysis as a marker for chromosome 17. In specific embodiments, polypeptides of the invention comprise the sequence:

- 5 GFSGVSAAGRRSGGTWQPVQ (SEQ ID NO:747); PGGLAVGSRWWSRSLT (SEQ ID NO:748); LEPSRQRRPRRRGGTSRPETDQRAKCWRQL (SEQ ID NO:749); and/or VCLRCQNRMEN (SEQ ID NO:750). In further specific embodiments, polypeptides of the invention comprise the sequence: MAACTARRPGR GQPLVVPVADXGPVAKAALCAAXAGAFSPASTTTTRHLSSNRNPEGKVLETV
- 10 GVFEVVPKQNGKYETGQLFLHSIFGYRGVVLFPWQARLXDRDVASAAPEKAEN PAGHGSKEVKGKTHYYQVLIDARDCPHISQRSQTEAVTFLANHDDSRALYAIP GLDYVSHEDILPYTSTDQVPIQHELPERFLLYDQTKAPPFVARETLRAWQEKNH PWLELSDVHRETTENIRVTVIPFYMGMREANSHVYWWRYCIRLENLSDSDVVQ LRERHWRIFSLSGTLETVRGRGVVGREPVLSKEQPAFQYSSHVSLQASSGHMW
- 15 GTFRFERPDGSHFDVRIPFSLSENKDEKTPPSGLHW (SEQ ID NO:751); MAACTARRPGRGQPLVVPVADXGPVAKAALCAA (SEQ ID NO:752); VLETVGVFEVVPKQNGKYETGQLFLHSIFGYRGVVL (SEQ ID NO:757); GLDYVSHEDILPYTST (SEQ ID NO:758); DVHRETTENIRVTVIPFYM (SEQ ID NO:759); WWRYCIRLENLSDSDVQLRER (SEQ ID NO:760); and/or PAFQYSS
- 20 HVSLQASSGHMWGTFRFER (SEQ ID NO:761). Polynucleotides encoding these polypeptides are also encompassed by the invention.

This gene is expressed primarily in gall bladder, prostate, and fetal brain, and to a lesser extent in a few tumor and fetal tissues.

- 25 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, growth related disorders such as cancers. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders
- 30 of the above tissues or cells, particularly of the prostate, gall bladder, and fetal brain, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e.,
- 35 the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of growth-related disorders, such cancers.

5 FEATURES OF PROTEIN ENCODED BY GENE NO: 184

In specific embodiments, polypeptides of the invention comprise the sequence:SLCCPEGAEGC (SEQ ID NO:762) and/or QLKKTHYDRPCP (SEQ ID NO:763). Polynucleotides encoding these polypeptides are also encompassed by the invention.

10 This gene is expressed primarily in stromal cell, tonsil, and glioblastoma and to a lesser extent in some other tissues.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are
15 not limited to, immune and inflammatory disorders and glioblastoma. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the stromal cells, tonsil, and glioblastoma expression of this gene at significantly higher or lower levels
20 may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Additionally, it is believed that the
25 product of this gene regulates pancreatic cell differentiation into beta cells. Accordingly, polynucleotides and polypeptides of the invention are useful in the treatment of insulin-dependent diabetes mellitus and associated conditions e.g. pancreatic hypofunction and the prevention, as well as the treatment of undifferentiated type pancreatic cancers. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 417 as
30 residues: Pro-27 to Ala-32.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of immune and inflammatory disorders and glioblastoma.

35 FEATURES OF PROTEIN ENCODED BY GENE NO: 185

This gene is expressed primarily in hepatocellular carcinoma and to a lesser extent in other tissues.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, liver diseases. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the liver, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 418 as residues: Gly-32 to Lys-39.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of liver diseases.

FEATURES OF PROTEIN ENCODED BY GENE NO: 186

This gene is expressed primarily in hippocampus and to a lesser extent in other tissues.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, neuronal disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the hippocampus, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of neuronal disorders.

FEATURES OF PROTEIN ENCODED BY GENE NO: 187

This gene is expressed primarily in bone cancer and hippocampus and to a lesser extent in osteoclastoma and other tissues.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, bone-related disorders and neuronal diseases. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the bone, osteoclast, and hippocampus, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

- The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of bone-related disorders and neuronal diseases.

FEATURES OF PROTEIN ENCODED BY GENE NO: 188

This gene maps to chromosome 4 and therefore polynucleotides of the invention can be used in linkage analysis as a marker for chromosome 4.

This gene is expressed primarily in neuronal tissues such as hippocampus, spinal cord, and hypothalamus and to a lesser extent in a few other tissues such as ovary.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, neuronal diseases. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the neuronal tissues, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of neuronal disorders.

FEATURES OF PROTEIN ENCODED BY GENE NO: 189

This gene maps to chromosome 10, therefore, polynucleotides of the invention can be used in linkage analysis as a marker for chromosome 10.

5 This gene is expressed primarily in neuronal tissues and immune tissues, and to a lesser extent in a few other tissues such as skin tumor, lung etc.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, neuronal and immune-related disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the neuronal and immune-related tissues, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 422 as residues: Pro-19 to Asp-25.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of neuronal and immune-related disorders.

25 FEATURES OF PROTEIN ENCODED BY GENE NO: 190

The translation product of this gene shares sequence homology with human N33, a gene located in a homozygously deleted region of human metastatic prostate cancer which is thought to be important in prevention of prostate cancer. In specific embodiments, polypeptides of the invention comprise the sequence:

30 AQRKKEMVLSEKVSQLEWNTNKRVPVIRMNGDKFRRLVKAPPRNYSVIVMFTA
LQLHRQCVVCKQADEEFQILANSWRYSSAFTNRIFFAMVDFDEGSDVFQMLNM
NSAPTFINFPAGKPKRGDTYELQVRGFSAEQIARWIADRTDVNIRVIRPPNMA
ARWRFWCVSVT (SEQ ID NO:765); MVVALLIVCDVPSAS (SEQ ID NO:766);
AQRKKEMVLSEKVSQLEWNTNKRVPVIRMNGDKF (SEQ
35 ID:768); RRLVKAPPRNYSVIVMFTALQLHRQCVVCKQADEEFQILANSWRY
SSAFTNRIFFA (SEQ ID NO:769); MVDFDEGSDVFQMLNMNSAPTFINFPAG
GKP (SEQ ID NO:770); KRGDTYELQVRGFSAEQIARWIADRTDVNIRVIRPPN

(SEQ ID NO:771); and/or YAGPLMLGLLLA VIGGLVYLRRVIWNFSLIKLDGLLQL CVLCLL (SEQ ID NO:772). Polynucleotides encoding these polypeptides are also encompassed by the invention.

5 This gene is expressed primarily in infant adrenal gland prostate cell line and to a lesser extent in a few other tissues like liver, smooth muscle etc.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, prostate cancer and endocrine disorders. Similarly, polypeptides and
10 antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the prostate and adrenal gland, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma,
15 urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 423 as residues: Pro-34 to Gly-43, Arg-113 to Pro-120.

20 The tissue distribution and homology to N33 indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment for prostate cancer and endocrine disorders.

FEATURES OF PROTEIN ENCODED BY GENE NO: 191

25 This gene is expressed primarily in T cell and to a lesser extent in fetal lung.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, immune disorders. Similarly, polypeptides and antibodies directed to
30 these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal
35 fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue

or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 424 as residues: Trp-3 to Phe-9.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of immune disorders.

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FEATURES OF PROTEIN ENCODED BY GENE NO: 192

This gene maps to chromosome 6, therefore, polynucleotides of the invention can be used in linkage analysis as a marker for chromosome 6. Neural activity and neurotrophins induce synaptic remodeling in part by altering gene expression. This gene is believed to be a glycosylphosphatidylinositol-anchored protein encoded by a hippocampal gene and to possess neural activity. This molecule is believed to be expressed in postmitotic-differentiating neurons of the developing nervous system and neuronal structures associated with plasticity in the adult. Message of this gene is believed to be induced by neuronal activity and by the activity-regulated neurotrophins BDNF and NT-3. The product of this gene is believed to stimulate neurite outgrowth and arborization in primary embryonic hippocampal and cortical cultures and to act as a downstream effector of activity-induced neurite outgrowth. In specific embodiments, polypeptides of the invention comprise the sequence: DAVFKGFSDCLLKLGD (SEQ ID NO:773); CQEGAKDMWDKLRKESKNLN (SEQ ID NO:774); VLLVLSAALATWLSF (SEQ ID NO:775); MGLKLNGRYISLILAVQIAYLVQAVR AAGKCD VFKGFSDCLLKLGD (SEQ ID NO:776); PAAWDDKTNIKTVCTYW EDFHSCTVTALTDCQEGAKDMWDKLRKESKNLNIQGSLFELCGSGNGAAGSL LPAFPVLLVLSAALATWLSF (SEQ ID NO:777); and/or MGLKLNGRYISLILA VQIAYLVQAVRAAGKCD VFKGFSDCLLKLGDXXXXXPAAWDDKTNIKTVCTY WEDFHSCTVTALTDCQEGAKDMWDKLRKESKNLNIQGSLFELCGSGNGAAGSL LPAFPVLLVLSAALATWLSF (SEQ ID NO:778). Polynucleotides encoding this polypeptide are also encompassed by the invention.

This gene is expressed primarily in human placenta, endometrial tumor and tissues of the central nervous system (CNS).

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, relating to reproductive disorders, cancers and neurological diseases. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the reproductive and neurological disorders, expression of this gene at significantly higher

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or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue
5 or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 425 as residues: Asp-47 to Asp-63, His-75 to Tyr-80, Pro-83 to Tyr-89.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of reproductive
10 disorders such as endometrial tumors. Expression of this gene in tissues of the CNS and its strong homology to Neuritin suggest that the protein product from this gene may also be used in the treatment and diagnosis of neurological disorders and in the regeneration of neural tissues, e.g., following injury.

15 **FEATURES OF PROTEIN ENCODED BY GENE NO: 193**

The translation product of this gene shares sequence homology with tenascin which is thought to be important in development. The translation product of this gene is believed to be a ligand of the fibroblast growth factor family. FGF ligand activity is known in the art and can be assayed by methods known in the art and disclosed
20 elsewhere herein.

This gene is expressed primarily in endometrial tumors, and other types of tumors.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a
25 biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, cancers. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the cancer tissues, expression of this gene at significantly higher or lower
30 levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those
35 comprising a sequence shown in SEQ ID NO: 426 as residues: Gly-29 to Glu-34, Arg-71 to Arg-76, Thr-176 to Cys-182, Gly-184 to Glu-199.

The tissue distribution and homology to tenascin indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of cancers.

5 **FEATURES OF PROTEIN ENCODED BY GENE NO: 194**

In specific embodiments, polypeptides of the invention comprise the sequence: MNSAAGFSLDRRERVLKLGESFEKQPRCASTLC (SEQ ID NO:779).

Polynucleotides encoding these polypeptides are also encompassed by the invention.

This gene is expressed primarily in fetal human lung and neutrophils.

10 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, lung development and respiratory disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes
15 for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the respiratory system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual
20 having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution in fetal lung and neutrophils indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis
25 and treatment of lung and immunity related diseases, for example, lung cancer, viral, fungal or bacterial infections (e.g. lesions caused by tuberculosis), inflammation (e.g. pneumonia), metabolic lesions etc.

FEATURES OF PROTEIN ENCODED BY GENE NO: 195

30 This gene is expressed primarily in breast lymph node.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, immunal disorders. Similarly, polypeptides and antibodies directed to
35 these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at

significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for the diagnosis and treatment of immunal disorders.

10 FEATURES OF PROTEIN ENCODED BY GENE NO: 196

This gene maps to chromosome 5 and accordingly, polynucleotides of the invention can be used in linkage analysis as a marker for chromosome 5. The translation product of this gene shares sequence homology with human M-phase phosphoprotein 4 which is thought to be important in phosphorylation and signal transduction processes. In specific embodiments, polypeptides of the invention comprise the sequence:

TIYPTEEELQAVQKIVSITERALKLVSD (SEQ ID NO:780); RALKGVLRV
 GVLAKGLLLRGDRNVNLVLLC (SEQ ID NO:781); ALAALRHAKWFQARAN
 GLQSCVIRILRDLQCRVPTWS (SEQ ID NO:782); GDALRRVFECISSGIL (SEQ
 ID NO:783); LAFRQIHKVLGMDPLP (SEQ ID NO:784); and/or TIYPTEEELQAVQ
 KIVSITERALKLVSDSLSEHEKNKNKEGDDKKEGGKDRALKGVLRVGVLAAG
 LLLRGDRNVNLVLLCSEKPSKTLISRIAENLPKQLAVISPEKYDIKCAVSEAAAIL
 NSCVEPKMQVTITLTSPRIEENMREGDVTSGMVKDPPDVLDRQKCLDALAALR
 HAKWFQARANGLOSCVIRILRDLQCRVPTWSDFPSWAMELLVEKAISSASSP
 QSPGDALRRVFECISSGILKGSPGLLDPCCKDPFDLATMTDQQREDITSSAQFA
 LRLLAFRQIHKVLGMDPLPQMSQRFNIHNNRKRRRSDGVDGFEEAGKKDKK
 DYDNF (SEQ ID NO:785). Polynucleotides encoding these polypeptides are also encompassed by the invention.

This gene is expressed primarily in Human Hippocampus and to a lesser extent in Prostate, Human Frontal Cortex.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, disorders related to reproductive system and nervous system. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the reproductive system and nervous system, expression of this gene at significantly higher or lower

levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution and homology to human M-phase phosphoprotein 4 indicates that polynucleotides and polypeptides corresponding to this gene are useful for the diagnosis and treatment of reproductive and nervous system disorders.

10 **FEATURES OF PROTEIN ENCODED BY GENE NO: 197**

In specific embodiments, polypeptides of the invention comprise the sequence: MGSQHSAAARPSSCRRKQEDDRDG (SEQ ID NO:786); LLAEREQEEAIAQFPYVEFTGRDSITCLTC (SEQ ID NO:787); and/or QGTGYIPTEQVNELVALIPHSDQRLRPQRTKQYV (SEQ ID NO:788).

15 Polynucleotides encoding these polypeptides are also encompassed by the invention.

This gene is expressed primarily in Human Primary Breast Cancer and to a lesser extent in Human Adult Spleen, Hodgkin's Lymphoma I, Salivary Gland.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, cancer and immunal disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the cancer and immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 430 as residues: Ser-126 to Gly-138.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for the diagnosis and treatment of cancer and immunal disorders.

FEATURES OF PROTEIN ENCODED BY GENE NO: 198

This gene is expressed primarily in monocytes.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, blood cell disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for the diagnosis and treatment of blood cell disorders.

FEATURES OF PROTEIN ENCODED BY GENE NO: 199

This gene is expressed primarily in Human Ovary and Synovia and to a lesser extent in Human 8 Week Whole Embryo.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, reproductive and developmental disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the reproductive and developmental system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for the diagnosis and treatment of reproductive and developmental disorders.

FEATURES OF PROTEIN ENCODED BY GENE NO: 200

This gene maps to chromosome 8 and therefore polynucleotides of the invention can be used in linkage analysis as a marker for chromosome 8. The translation product of this gene shares limited sequence homology with collagen proline rich domain.

This gene is expressed primarily in CNS.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, neurological diseases. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the nervous system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 433 as residues: Pro-35 to Asp-41.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of neurological diseases.

25 FEATURES OF PROTEIN ENCODED BY GENE NO: 201

Translation product of this gene shares homology with a mammalian histone H1a protein. One embodiment for this gene is the polypeptide fragments comprising the following amino acid sequence: ARLNVGRESLKREMLKSQGVKVSSEPMGAR HSSWPEGAAFCCKKVQGAQMCFPPRR (SEQ ID NO:789); ARLNVGRESLKR EML (SEQ ID NO:790); LKSQGVKVSSEPMGARHSSW (SEQ ID NO:791); AFCKKVQGAQMCFPPRR (SEQ ID NO:792). An additional embodiment is the polynucleotide fragments encoding these polypeptide (See Accession No. pirlS24178) fragments.

This gene is expressed primarily in neutrophils.

Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are

not limited to, immune disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune system, expression of this gene at

5 significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

10 The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of immune disorders. Since the gene is expressed in cells of lymphoid origin, the natural gene product may be involved in vital immune functions. Therefore it may be also used as an agent for immunological disorders including arthritis, asthma, immune deficiency diseases such

15 as AIDS, and leukemia.

FEATURES OF PROTEIN ENCODED BY GENE NO: 202

This gene is expressed primarily in neutrophils.

Therefore, polynucleotides and polypeptides of the invention are useful as

20 reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, immune disorders. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above

25 tissues or cells, particularly of the immune system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level

30 in healthy tissue or bodily fluid from an individual not having the disorder.

The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of immune disorders. Since the gene is expressed in cells of lymphoid origin, the natural gene product may be involved in immune functions. Therefore it may be also used as an agent for

35 immunological disorders including arthritis, asthma, immune deficiency diseases such as AIDS, and leukemia.

FEATURES OF PROTEIN ENCODED BY GENE NO: 203

This gene is expressed primarily in Neutrophils.

Therefore, polynucleotides and polypeptides of the invention are useful as
5 reagents for differential identification of the tissue(s) or cell type(s) present in a
biological sample and for diagnosis of diseases and conditions, which include, but are
not limited to, infectious disorders, immune disorders, and cancers. Similarly,
polypeptides and antibodies directed to these polypeptides are useful in providing
immunological probes for differential identification of the tissue(s) or cell type(s). For
10 a number of disorders of the above tissues or cells, particularly of the immune system,
expression of this gene at significantly higher or lower levels may be routinely detected
in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum,
plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from
an individual having such a disorder, relative to the standard gene expression level, i.e.,
15 the expression level in healthy tissue or bodily fluid from an individual not having the
disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID
NO: 436 as residues: Thr-31 to Lys-36.

The tissue distribution indicates that polynucleotides and polypeptides
corresponding to this gene are useful for diagnosis and treatment of infectious
20 disorders, immune disorders, and cancers. Since the gene is expressed in cells of
lymphoid origin, the natural gene product may be involved in immune functions.
Therefore it may be also used as an agent for immunological disorders including
arthritis, asthma, immune deficiency diseases such as AIDS, and leukemia. Protein, as
well as, antibodies directed against the protein may show utility as a tumor marker
25 and/or immunotherapy targets for the above listed tumors and tissues.

FEATURES OF PROTEIN ENCODED BY GENE NO: 204

This gene maps to chromosome 16 and therefore polynucleotides of the
invention can be used in linkage analysis as markers for chromosome 16. The
30 translation product of this gene shares sequence homology with lactate dehydrogenase
which is thought to be important in lactate metabolism.

This gene is expressed primarily in human tonsils and to a lesser extent in
Spleen, and Neutrophils.

Therefore, polynucleotides and polypeptides of the invention are useful as
35 reagents for differential identification of the tissue(s) or cell type(s) present in a
biological sample and for diagnosis of diseases and conditions, which include, but are
not limited to, immune disorders, infectious disorders, and cancers. Similarly,

polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the immune disorders, infectious disorders, and cancers, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 437 as residues: Gly-7 to Ser-12.

The tissue distribution and homology to lactate dehydrogenase gene indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of immune disorders, infectious disorders, and cancers.

15 **FEATURES OF PROTEIN ENCODED BY GENE NO: 205**

The translation product of this gene shares sequence homology with Gcap1 protein which is developmentally regulated in brain.

This gene is expressed primarily in placenta and endometrial tumor and to a lesser extent in several other tumors.

20 Therefore, polynucleotides and polypeptides of the invention are useful as reagents for differential identification of the tissue(s) or cell type(s) present in a biological sample and for diagnosis of diseases and conditions, which include, but are not limited to, vasculogenesis/angiogenesis and tumorigenesis. Similarly, polypeptides and antibodies directed to these polypeptides are useful in providing immunological probes for differential identification of the tissue(s) or cell type(s). For a number of disorders of the above tissues or cells, particularly of the vascular system and tumors, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder.

35 The tissue distribution and homology to Gcap1 protein indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and treatment of disorder or dysfunction of vascular system of tumorigenesis.

FEATURES OF PROTEIN ENCODED BY GENE NO: 206

In specific embodiments, polypeptides of the invention comprise the sequence
 MPYAQWLAENDRFEEAQKAFHKAGRQREA (SEQ ID NO:799);
 VQVLEQLTNNAVAESRFNDAAYYYWMLSMQCLDIAQD (SEQ ID NO:794);
 5 PAQKDTMLGKFYHFQRLAELYHGYHAIHRHTEDP (SEQ ID NO: 795);
 FSVHRPETLFNISRFLHSLPKDTPSGISKVKILFT (SEQ ID NO:800);
 LAKQSKALGAYRLARHAYDKLRGLYIP (SEQ ID NO:796); ARFQKSIELG
 TLTIRAKPFHDSEELVPLCYRCSTNN (SEQ ID NO: 797); and/or PLLNNLGNVC
 INCRQPFIFSASSYDVLHLVEFYLEEGITDEEAISLIDLEVLPRKRDDRQLEICKQQ
 10 LPDSCG (SEQ ID NO:798). Polynucleotides encoding these polypeptides are also
 encompassed by the invention.

This gene is expressed primarily in testes.

Therefore, polynucleotides and polypeptides of the invention are useful as
 reagents for differential identification of the tissue(s) or cell type(s) present in a
 15 biological sample and for diagnosis of diseases and conditions, which include, but are
 not limited to, male reproductive and endocrine disorders. Similarly, polypeptides and
 antibodies directed to these polypeptides are useful in providing immunological probes
 for differential identification of the tissue(s) or cell type(s). For a number of disorders
 of the above tissues or cells, particularly of the reproductive and endocrine systems,
 20 expression of this gene at significantly higher or lower levels may be routinely detected
 in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum,
 plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from
 an individual having such a disorder, relative to the standard gene expression level, i.e.,
 the expression level in healthy tissue or bodily fluid from an individual not having the
 25 disorder.

The tissue distribution indicates that polynucleotides and polypeptides
 corresponding to this gene are useful for treatment of male reproductive and endocrine
 disorders.

30 FEATURES OF PROTEIN ENCODED BY GENE NO: 207

This gene is expressed in fetal lung.

Therefore, polynucleotides and polypeptides of the invention are useful as
 reagents for differential identification of the tissue(s) or cell type(s) present in a
 biological sample and for diagnosis of diseases and conditions, which include, but are
 35 not limited to, lung diseases such as cystic fibrosis. Similarly, polypeptides and
 antibodies directed to these polypeptides are useful in providing immunological probes
 for differential identification of the tissue(s) or cell type(s). For a number of disorders

of the above tissues or cells, particularly of the respiratory system, expression of this gene at significantly higher or lower levels may be routinely detected in certain tissues (e.g., cancerous and wounded tissues) or bodily fluids (e.g., serum, plasma, urine, synovial fluid or spinal fluid) or another tissue or cell sample taken from an individual
5 having such a disorder, relative to the standard gene expression level, i.e., the expression level in healthy tissue or bodily fluid from an individual not having the disorder. Preferred epitopes include those comprising a sequence shown in SEQ ID NO: 440 as residues: Tyr-49 to Cys-54.

The tissue distribution indicates that polynucleotides and polypeptides
10 corresponding to this gene are useful for detection and treatment of disorders associated with developing lungs particularly in premature infants where the lungs are the last tissues to develop. The tissue distribution indicates that polynucleotides and polypeptides corresponding to this gene are useful for diagnosis and intervention of lung tumors since the gene may be involved in the regulation of cell division,
15 particularly since it is expressed in fetal tissue. Protein, as well as, antibodies directed against the protein may show utility as a tumor marker and immunotherapy targets for the above listed tumors and tissues.

Gene No.	cDNA Clone ID	ATCC Deposit Nr and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of NT Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
1	HLHDS67	97979 03/27/97	Uni-ZAP XR	11	2526	427	2526	458	458	234	1	30	31	30
2	HLHDZ58	97979 03/27/97	Uni-ZAP XR	12	1131	1	1131	129	129	235	1	14	15	115
3	HLMMJ13	97979 03/27/97	Lambda ZAP II	13	941	39	941	62	62	236	1	44	45	102
3	HLMMJ13	97979 03/27/97	Lambda ZAP II	218	941	39	941	245	245	441	1	35	36	41
4	HLTEI25	97979 03/27/97	Uni-ZAP XR	14	843	1	843	155	155	237	1	19	20	42
5	HMSJX24	97979 03/27/97	Uni-ZAP XR	15	1018	1	1018	90	90	238	1	18	19	36
6	HNFEED65	97979 03/27/97	Uni-ZAP XR	16	661	1	661	76	76	239	1	28	29	127
7	HNHDX07	97979 03/27/97	Uni-ZAP XR	17	553	1	553	106	106	240	1	23	24	66
8	HNHGC82	97979 03/27/97	Uni-ZAP XR	18	869	1	869	101	101	241	1	21	22	68
9	HNHGO09	97979 03/27/97	Uni-ZAP XR	19	959	1	959	176	176	242	1	21	22	44
10	HOUBEI8	97979 03/27/97	Uni-ZAP XR	20	1446	1	1446	101	101	243	1	27	28	50
11	HOUDL69	97979 03/27/97	Uni-ZAP XR	21	1471	579	1460	692	692	244	1	31	32	42

Gene No.	cDNA Clone ID	ATCC Deposit Nr and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
12	HPMF171	97979 03/27/97	Uni-ZAP XR	22	1402	242	1402	401	401	245	1	32	33	60
13	HPMGQ55	97979 03/27/97	Uni-ZAP XR	23	1047	1	1047	164	164	246	1	26	27	35
14	HPQAC69	97979 03/27/97	Lambda ZAP II	24	990	1	988	82	82	247	1	20	21	37
15	HPTBB03	97979 03/27/97	Uni-ZAP XR	25	1208	350	1173	398	398	248	1	29	30	210
16	HPTWA66	97979 03/27/97	pBluescript	26	1922	1381	1922	24	24	249	1	33	34	547
16	HPTWA66	97979 03/27/97	pBluescript	219	575	1	575	148	148	442	1	22	23	65
17	HPTWC08	97979 03/27/97	pBluescript	27	1951	1422	1874	219	219	250	1	19	20	299
18	HRGCZ46	97979 03/27/97	Uni-ZAP XR	28	3989	2635	3989		2748	251	1	16	17	39
19	HSADVU34	97979 03/27/97	Uni-ZAP XR	29	3735	2966	3735	272	272	252	1	30	31	594
19	HSADVU34	97979 03/27/97	Uni-ZAP XR	220	3018	1929	3018	26	26	443	1	1	2	156
20	HSDFW61	97974 04/04/97 209080 05/29/97	Uni-ZAP XR	30	1667	59	1625	138	138	253	1	32	33	130
21	HSDGP60	97974 04/04/97	Uni-ZAP XR	31	1408	1	1408	285	285	254	1			20

Gene No.	cDNA Clone ID	ATCC Deposit Nr and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
		209080 05/29/97												
22	HSOAJ55	97974 04/04/97 209080 05/29/97	Uni-ZAP XR	32	2031	1273	2031	1285	1285	255	1	29	30	30
23	HSQEO84	97974 04/04/97 209080 05/29/97	Uni-ZAP XR	33	971	13	971	91	91	256	1	19	20	218
23	HSQEO84	97974 04/04/97 209080 05/29/97	Uni-ZAP XR	221	968	8	968	86	86	444	1	20	21	56
24	HSXAM05	97974 04/04/97 209080 05/29/97	Uni-ZAP XR	34	1792	369	1792	470	470	257	1	26	27	49
25	HSXAS67	97974 04/04/97 209080 05/29/97	Uni-ZAP XR	35	896	1	896	96	96	258	1	32	33	121
26	HTDAF28	97974 04/04/97 209080 05/29/97	pSport1	36	912	1	912	38	38	259	1	22	23	87
27	HTEGQ64	97974	Uni-ZAP XR	37	1382	67	1382	271	271	260	1			25

Gene No.	cDNA Clone ID	ATCC Deposit Nr and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
		04/04/97 209080 05/29/97												
28	HTGEU09	97974 04/04/97 209080 05/29/97	Uni-ZAP XR	38	872	1	872	74	74	261	1	18	19	28
29	HTOAM21	97974 04/04/97 209080 05/29/97	Uni-ZAP XR	39	812	1	812	41	41	262	1	30	31	43
30	HTPBW79	209511 12/03/97	Uni-ZAP XR	40	1515	118	1507	302	302	263	1	24	25	362
30	HTSEV09	97974 04/04/97 209080 05/29/97	pBluescript	222	1404	1	1265	92	92	445	1	19	20	415
31	HJPCD40	97974 04/04/97 209080 05/29/97	Uni-ZAP XR	41	704	22	704		117	264	1	18	19	127
32	HTWBY48	97974 04/04/97 209080 05/29/97	pSport1	42	1094	1	1094	32	32	265	1	34	35	53
33	HTWC146	97974 04/04/97	pSport1	43	1821	892	1647	56	56	266	1	26	27	28

Gene No.	cDNA Clone ID	ATCC Deposit Nr and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
		209080 05/29/97											
34	HTXGI75	97974 04/04/97 209080 05/29/97	Uni-ZAP XR	44	1024	30	1024	167	267	1	20	21	25
35	HWTBF59	97974 04/04/97 209080 05/29/97	Uni-ZAP XR	45	983	779	983	85	268	1	30	31	221
35	HWTBF59	97974 04/04/97 209080 05/29/97	Uni-ZAP XR	223	707	488	707	514	446	1	41	42	64
36	HADAE74	97974 04/04/97 209080 05/29/97	pSport1	46	2421	664	1587	710	269	1			2
37	HAGFB60	97974 04/04/97 209080 05/29/97	Uni-ZAP XR	47	840	1	840	97	270	1	30	31	48
38	HATEF60	97974 04/04/97 209080 05/29/97	Uni-ZAP XR	48	2432	1193	2246	1491	271	1	17	18	51
39	HBMSN25	97974	Uni-ZAP XR	49	1742	1165	1742	1207	272	1	23	24	31

Gene No.	cDNA Clone ID	ATCC Deposit Nr and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
		04/04/97 209080 05/29/97												
40	HCDAR68	97974 04/04/97 209080 05/29/97	Uni-ZAP XR	50	1487	181	1455	325	325	273	1	35	36	56
41	HCE3J79	97974 04/04/97 209080 05/29/97	Uni-ZAP XR	51	1328	251	1328	525	525	274	1			21
42	HMDAN54	97974 04/04/97 209080 05/29/97	Uni-ZAP XR	52	1856	725	1853	928	928	275	1	33	34	50
43	HCECA49	97974 04/04/97 209080 05/29/97	Uni-ZAP XR	53	1558	310	1408	393	393	276	1			1
44	HCEEC15	97974 04/04/97 209080 05/29/97	Uni-ZAP XR	54	948	1	948	9	9	277	1	23	24	65
45	HCESF40	97974 04/04/97 209080 05/29/97	pBluescript	55	990	99	990	193	193	278	1	32	33	256

Gene No.	cDNA Clone ID	ATCC Deposit Nr and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
45	HCESEF40	97974 04/04/97 209080 05/29/97	pBluescript	224	1384	99	1384	193	193	447	1	32	33	205
46	HCFMV39	97974 04/04/97 209080 05/29/97	pSport1	56	1603	1	1296	96	96	279	1	29	30	102
47	HCMMSX86	97975 04/04/97 209081 05/29/97	Uni-ZAP XR	57	1052	5	786	12	12	280	1	28	29	32
48	HCNAP62	97975 04/04/97 209081 05/29/97	Lambda ZAP II	58	814	1	558	93	93	281	1	22	23	42
49	HCRAF32	97975 04/04/97 209081 05/29/97	Uni-ZAP XR	59	1215	257	1215		356	282	1	19	20	20
50	HCUDC07	97975 04/04/97 209081 05/29/97	ZAP Express	60	478	1	478	147	147	283	1	36	37	69
51	HCWBB42	97975 04/04/97 209081	ZAP Express	61	618	1	618	212	212	284	1	35	36	74

Gene No.	cDNA Clone ID	ATCC Deposit Nr and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
52	HDTAB05	97975 04/04/97 209081	pcMVSPORT 2.0	62	751	1	751	257	257	285	1	21	22	32
53	HE2AV74	97975 04/04/97 209081	Uni-ZAP XR	63	780	283	780		433	286	1			16
54	HE2AY71	97975 04/04/97 209081	Uni-ZAP XR	64	588	21	588	169	169	287	1			16
55	HE2GS36	97975 04/04/97 209081	Uni-ZAP XR	65	774	272	774	445	445	288	1			37
56	HE2OF09	97975 04/04/97 209081	Uni-ZAP XR	66	1866	1313	1866	1596	1596	289	1			11
57	HE6EU50	97975 04/04/97 209081	Uni-ZAP XR	67	1152	117	686	237	237	290	1	20	21	34
58	HE9HU17	97975 04/04/97	Uni-ZAP XR	68	2483	1577	2448	1620	1620	291	1			14

Gene No.	cDNA Clone ID	ATCC Deposit Nr and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
		209081 05/29/97												
59	HE9ND48	97975 04/04/97 209081 05/29/97	Uni-ZAP XR	69	536	1	536	83	83	292	1	36	37	43
60	HEBBW11	97975 04/04/97 209081 05/29/97	Uni-ZAP XR	70	865	647	865		388	293	1	30	31	135
61	HELDY74	97975 04/04/97 209081 05/29/97	Uni-ZAP XR	71	932	1	932	201	201	294	1	17	18	33
62	HEMAE80	97975 04/04/97 209081 05/29/97	Uni-ZAP XR	72	996	1	945	12	12	295	1	24	25	136
63	HFEB A88	97975 04/04/97 209081 05/29/97	Uni-ZAP XR	73	785	464	785	356	356	296	1	29	30	57
64	HFGAB89	97975 04/04/97 209081 05/29/97	Uni-ZAP XR	74	1069	196	1047	295	295	297	1	32	33	34
65	HFVHY45	97975	pBluescript	75	831	1	831		89	298	1	30	31	76

Gene No.	cDNA Clone ID	ATCC Deposit Nr and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
72	HHGDOI3	97975 04/04/97 209081 05/29/97	Lambda ZAP II	82	1381	766	1371	993	993	305	1	23	24	34
73	HHPFD63	97975 04/04/97 209081 05/29/97	Uni-ZAP XR	83	1706	182	1644	257	257	306	1	24	25	81
74	HHSEG23	97976 04/04/97	Uni-ZAP XR	84	573	1	573	160	160	307	1	18	19	71
75	HJPAV06	97976 04/04/97	Uni-ZAP XR	85	684	199	684	323	323	308	1	27	28	33
76	HKIXL73	97976 04/04/97	pBluescript	86	1036	591	1036	690	690	309	1	32	33	114
77	HKMNC43	97976 04/04/97	pBluescript	87	908	1	908	139	139	310	1	18	19	108
78	HMEJE31	97976 04/04/97	Lambda ZAP II	88	655	1	655	165	165	311	1	33	34	64
79	HMSKS35	97976 04/04/97	Uni-ZAP XR	89	1102	1	1102	228	228	312	1	26	27	49
80	HNF AE54	97976 04/04/97	Uni-ZAP XR	90	1533	665	1518	347	347	313	1	26	27	293
81	HNFJH45	97976 04/04/97	Uni-ZAP XR	91	575	1	575	275	275	314	1	30	31	67
82	HNGBT31	97976 04/04/97	Uni-ZAP XR	92	639	1	639	224	224	315	1	28	29	104

Gene No.	cDNA Clone ID	ATCC Deposit Nr and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
83	HNGIN60	97976 04/04/97	Uni-ZAP XR	93	744	1	744	225	225	316	1	43	44	70
84	HNGIG84	97976 04/04/97	Uni-ZAP XR	94	526	1	526	268	268	317	1	29	30	38
85	HNHDW42	97976 04/04/97	Uni-ZAP XR	95	426	1	426	168	168	318	1	28	29	71
86	HNHFL57	97976 04/04/97	Uni-ZAP XR	96	844	1	844	98	98	319	1	25	26	61
87	HOGAR52	97977 04/04/97 209082 05/29/97	PCMVSPORT 2.0	97	1985	453	1985	533	533	320	1	17	18	285
88	HOSBZ55	97977 04/04/97 209082 05/29/97	Uni-ZAP XR	98	1416	69	1416	246	246	321	1	32	33	54
89	HOSDI92	97977 04/04/97 209082 05/29/97	Uni-ZAP XR	99	1935	141	772		274	322	1	20	21	58
90	HPBCU51	97977 04/04/97 209082 05/29/97	pBluescript SK-	100	599	1	599	86	86	323	1	27	28	119
91	HPCAL49	97977 04/04/97 209082	Uni-ZAP XR	101	784	1	784		280	324	1	18	19	43

Gene No.	cDNA Clone ID	ATCC Deposit Nr and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of NT Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
92	HPFCR13	97977 04/04/97 209082 05/29/97	Uni-ZAP XR	102	1035	602	1035	859	859	325	1	32	33	58
93	HPHAC83	97977 04/04/97 209082 05/29/97	Uni-ZAP XR	103	2218	840	2182	1035	1035	326	1	17	18	17
94	HPMBQ32	97977 04/04/97 209082 05/29/97	Uni-ZAP XR	104	1351	1	1351	18	18	327	1	23	24	86
95	HPWAN23	97977 04/04/97 209082 05/29/97	Uni-ZAP XR	105	2066	51	2052	270	270	328	1	29	30	537
95	HPWAN23	97977 04/04/97 209082 05/29/97	Uni-ZAP XR	226	2057	1	1954	220	220	449	1	29	30	315
96	HRDFB85	97977 04/04/97 209082 05/29/97	Uni-ZAP XR	106	1705	23	1697	233	233	329	1	21	22	201
97	HRGBR28	97977 04/04/97	Uni-ZAP XR	107	1167	611	1167	53	53	330	1	1	2	263

Gene No.	cDNA Clone ID	ATCC Deposit Nr and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
		209082 05/29/97												
98	HSKGN81	97977 04/04/97 209082 05/29/97	pBluescript	108	1907	151	1432	353	353	331	1	23	24	260
98	HSKGN81	97977 04/04/97 209082 05/29/97	pBluescript	227	2084	335	2084	537	537	450	1	19	20	23
99	HSPAH56	97977 04/04/97 209082 05/29/97	pSport1	109	611	1	576	229	229	332	1	25	26	47
100	HE8EU04	209746 04/07/98	Uni-ZAP XR	110	2632	294	2632	337	337	333	1	25	26	333
100	HSXBT86	97977 04/04/97 209082 05/29/97	Uni-ZAP XR	228	2143	53	1096	235	235	451	1			9
101	HSXCS62	97977 04/04/97 209082 05/29/97	Uni-ZAP XR	111	2249	1	1953	90	90	334	1	18	19	199
102	HTEFU09	97977 04/04/97 209082	Uni-ZAP XR	112	2198	228	2158	400	400	335	1			23

Gene No.	cDNA Clone ID	ATCC Deposit Nr and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of NT Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
103	HTEKM35	97977 04/04/97 209082 05/29/97	Uni-ZAP XR	113	1043	40	1043	320	320	336	1	20	21	142
104	HTGEP89	97977 04/04/97 209082 05/29/97	Uni-ZAP XR	114	703	1	703	285	285	337	1	29	30	94
105	HTGEW91	97977 04/04/97 209082 05/29/97	Uni-ZAP XR	115	3684	526	1338	584	584	338	1	24	25	37
106	HIOEY16	97977 04/04/97 209082 05/29/97	Uni-ZAP XR	116	1965	127	1915	202	202	339	1	27	28	38
107	HTPCN79	97977 04/04/97 209082 05/29/97	Uni-ZAP XR	117	503	1	503		1	340	1	7	8	70
108	HTSGM54	97977 04/04/97 209082 05/29/97	pBluescript	118	1133	316	1069		423	341	1	12	13	84
109	HTSHE40	97977 04/04/97	pBluescript	119	1101	118	956	218	218	342	1	31	32	89

Gene No.	cDNA Clone ID	ATCC Deposit Nr and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
		209082 05/29/97												
110	HTWAF58	97977 04/04/97 209082 05/29/97	Lambda ZAP II	120	282	1	282	137	137	343	1	25	26	48
111	HTWBY29	97977 04/04/97 209082 05/29/97	pSport1	121	2635	1593	2489	1654	1654	344	1	25	26	55
112	HUKFC71	209007 04/28/97 209083 05/29/97	Lambda ZAP II	122	994	1	932		272	345	1	15	16	221
113	HCE3Q10	209007 04/28/97 209083 05/29/97	Uni-ZAP XR	123	1542	1	1542	143	143	346	1	25	26	63
114	HCEVR60	209007 04/28/97 209083 05/29/97	Uni-ZAP XR	124	1390	82	1390	127	127	347	1	32	33	153
115	HDTAW95	209007 04/28/97 209083 05/29/97	pcMVSpport 2.0	125	1288	412	1288	571	571	348	1			16
116	HE6EL90	209007	Uni-ZAP XR	126	1517	1	1452	243	243	349	1			9

Gene No.	cDNA Clone ID	ATCC Deposit Nr and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
		04/28/97 209083 05/29/97												
117	HELB29	209007 04/28/97 209083 05/29/97	Uni-ZAP XR	127	1073	198	1073		776	350	1			13
118	HERAH36	209007 04/28/97 209083 05/29/97	Uni-ZAP XR	128	300	155	300	202	202	351	1			17
119	HFXBW82	209007 04/28/97 209083 05/29/97	Lambda ZAP II	129	1275	1	1275	56	56	352	1	23	24	61
120	HHP2D20	209007 04/28/97 209083 05/29/97	Uni-ZAP XR	130	472	51	472		243	353	1			32
121	HIBED17	209007 04/28/97 209083 05/29/97	Other	131	1950	284	1927	395	395	354	1	72	73	245
122	HLTER03	209007 04/28/97 209083 05/29/97	Uni-ZAP XR	132	990	1	990	78	78	355	1	22	23	34

Gene No.	cDNA Clone ID	ATCC Deposit Nr and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
123	HOABL56	209007 04/28/97 209083 05/29/97	Uni-ZAP XR	133	1720	565	1720	660	660	356	1	18	19	21
124	HPMCI92	209007 04/28/97 209083 05/29/97	Uni-ZAP XR	134	705	28	705	106	106	357	1	28	29	98
125	HPWAZ95	209007 04/28/97 209083 05/29/97	Uni-ZAP XR	135	323	1	323	88	88	358	1	27	28	78
126	HRGBR18	209007 04/28/97 209083 05/29/97	Uni-ZAP XR	136	582	1	582		16	359	1	17	18	30
127	HSUBW09	209007 04/28/97 209083 05/29/97	Uni-ZAP XR	137	1021	1	1021	153	153	360	1	32	33	56
128	HUKCO64	209007 04/28/97 209083 05/29/97	Lambda ZAP II	138	1777	439	1777		521	361	1			2
129	H6EAA53	209007 04/28/97 209083	Uni-ZAP XR	139	643	303	643		313	362	1	7	8	31

Gene No.	cDNA Clone ID	ATCC Deposit Nr and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
130	HAGAI11	209007 04/28/97 209083 05/29/97	Uni-ZAP XR	140	1220	1	1220		127	363	1	16	17	27
131	HAGAO39	209007 04/28/97 209083 05/29/97	Uni-ZAP XR	141	721	1	721		415	364	1			14
132	HALSK07	209007 04/28/97 209083 05/29/97	Uni-ZAP XR	142	1468	125	1468	210	210	365	1	29	30	33
133	HALSQ59	209007 04/28/97 209083 05/29/97	Uni-ZAP XR	143	300	4	300	101	101	366	1	22	23	66
134	HAIBP89	unknown 05/18/98	Uni-ZAP XR	144	2243	173	2243	311	311	367	1	27	28	317
134	HGCB91	209007 04/28/97 209083 05/29/97	Uni-ZAP XR	229	1025	409	1025	624	624	452	1	20	21	25
135	HBMTD81	209008 04/28/97 209084 05/29/97	Uni-ZAP XR	145	1082	163	1082	357	357	368	1			30

Gene No.	cDNA Clone ID	ATCC Deposit Nr and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
136	HBXGK12	209008 04/28/97 209084 05/29/97	ZAP Express	146	4313	1153	4313	1313	1313	369	1	18	19	42
137	HFKF107	209010 04/28/97 209085 05/29/97	Uni-ZAP XR	147	1183	1	1183	149	149	370	1	41	42	254
138	HCQA140	209008 04/28/97 209084 05/29/97	Lambda ZAP II	148	734	1	734	285	285	371	1			19
139	HCWHZ24	209008 04/28/97 209084 05/29/97	ZAP Express	149	1405	1	1405	108	108	372	1	34	35	63
140	HE2GT20	209008 04/28/97 209084 05/29/97	Uni-ZAP XR	150	2890	1178	2890	1178	1178	373	1	31	32	39
141	HE8EY43	209008 04/28/97 209084 05/29/97	Uni-ZAP XR	151	2399	1181	2399	1265	1265	374	1	30	31	34
142	HFCB37	209008 04/28/97 209084	Uni-ZAP XR	152	802	352	802		487	375	1			10

Gene No.	cDNA Clone ID	ATCC Deposit Nr and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
143	HFTCT67	209008 04/28/97 209084 05/29/97	Uni-ZAP XR	153	461	24	461	145	145	376	1	37	38	63
144	HGLAM46	209008 04/28/97 209084 05/29/97	Uni-ZAP XR	154	2388	818	2388	648	648	377	1			18
145	HHGBR15	209008 04/28/97 209084 05/29/97	Lambda ZAP II	155	642	322	642	400	400	378	1			4
146	HJAAU36	209008 04/28/97 209084 05/29/97	pBluescript SK-	156	1251	583	1251		933	379	1	16	17	16
147	HUSIT49	209008 04/28/97 209084 05/29/97	pSport1	157	2127	247	2127	383	383	380	1	47	48	83
148	HKLAB16	209008 04/28/97 209084 05/29/97	Lambda ZAP II	158	1625	817	1625	1012	1012	381	1	18	19	20
149	HLMMU76	209008 04/28/97	Lambda ZAP II	159	1687	1307	1687	1296	1296	382	1	28	29	28

Gene No.	cDNA Clone ID	ATCC Deposit Nr and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
		209084 05/29/97												
150	HMSKQ35	209008 04/28/97 209084 05/29/97	Uni-ZAP XR	160	1842	172	1463	319	319	383	1	30	31	33
151	HNHED86	209008 04/28/97 209084 05/29/97	Uni-ZAP XR	161	770	1	770	30	30	384	1	31	32	46
152	HNHEI88	209008 04/28/97 209084 05/29/97	Uni-ZAP XR	162	519	1	519	242	242	385	1	17	18	24
153	HNHFQ63	209008 04/28/97 209084 05/29/97	Uni-ZAP XR	163	753	1	753	164	164	386	1	17	18	67
154	HOECU83	209009 04/28/97	Uni-ZAP XR	164	1400	189	1400		508	387	1	22	23	33
155	HPTRC15	209009 04/28/97	pBluescript	165	2153	594	2153		611	388	1			13
156	HSKCP69	209009 04/28/97	Uni-ZAP XR	166	1251	219	1120			389	1			
156	HSKCP69	209009 04/28/97	Uni-ZAP XR	230	1250	223	1250	393	393	453	1	32	33	171
157	H6EAE26	209009 04/28/97	Uni-ZAP XR	167	882	48	882	155	155	390	1	33	34	153

Gene No.	cDNA Clone ID	ATCC Deposit Nr and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
158	HAGBX03	209009 04/28/97	Uni-ZAP XR	168	1208	1	1208	182	182	391	1			8
159	HAGDQ47	209009 04/28/97	Uni-ZAP XR	169	1307	1	1307	44	44	392	1	22	23	60
160	HAICP19	209009 04/28/97	Uni-ZAP XR	170	1624	89	1483	128	128	393	1	18	19	446
161	HAUAE83	209009 04/28/97	Uni-ZAP XR	171	2003	889	2003	1080	1080	394	1			23
162	HBHAD12	209009 04/28/97	Uni-ZAP XR	172	786	1	786		176	395	1	17	18	23
163	HBMTY28	209009 04/28/97	Uni-ZAP XR	173	1758	962	1758	1184	1184	396	1	27	28	34
164	HBMPV04	209009 04/28/97	Uni-ZAP XR	174	888	330	862		546	397	1			2
165	HCDDDB78	209009 04/28/97	Uni-ZAP XR	175	2379	750	2379	901	901	398	1	18	19	24
166	HCEQA68	209010 04/28/97 209085 05/29/97	Uni-ZAP XR	176	1348	1	1348	12	12	399	1	28	29	78
167	HCEZS40	209010 04/28/97 209085 05/29/97	Uni-ZAP XR	177	1502	178	1502	315	315	400	1			20
168	HCFNFI1	209010	pSport1	178	1637	26	1607	152	152	401	1	44	45	257

Gene No.	cDNA Clone ID	ATCC Deposit Nr and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
		04/28/97 209085 05/29/97												
169	HCRBL20	209010 04/28/97 209085 05/29/97	Uni-ZAP XR	179	2911	1103	2858	192	192	402	1	32	33	424
169	HCRBL20	209010 04/28/97 209085 05/29/97	Uni-ZAP XR	231	1811	20	1811	93	93	454	1	36	37	95
170	HCUBL62	209010 04/28/97 209085 05/29/97	ZAP Express	180	519	1	519	57	57	403	1	28	29	32
171	HDSAP81	209010 04/28/97 209085 05/29/97	Uni-ZAP XR	181	968	320	968	476	476	404	1	27	28	79
172	HE2CT29	209010 04/28/97 209085 05/29/97	Uni-ZAP XR	182	1128	1	1128	111	111	405	1	26	27	94
173	HE8MG65	209010 04/28/97 209085 05/29/97	Uni-ZAP XR	183	2276	48	2276	88	88	406	1	37	38	257

Gene No.	cDNA Clone ID	ATCC Deposit Nr and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
173	HE8MG65	209010 04/28/97 209085 05/29/97	Uni-ZAP XR	232	2271	56	2232	79	79	455	1	43	44	170
174	HE9FB42	209010 04/28/97 209085 05/29/97	Uni-ZAP XR	184	2500	76	1693	518	518	407	1	1	2	623
175	HEMAM41	209010 04/28/97 209085 05/29/97	Uni-ZAP XR	185	1337	60	1328	175	175	408	1	39	40	190
175	HEMAM41	209010 04/28/97 209085 05/29/97	Uni-ZAP XR	233	1338	33	1327	175	175	456	1	32	33	91
176	HEMCV19	209010 04/28/97 209085 05/29/97	Uni-ZAP XR	186	941	33	931	79	79	409	1	23	24	178
177	HEMDX17	209010 04/28/97 209085 05/29/97	Uni-ZAP XR	187	654	1	654	137	137	410	1			13
178	HETAR54	209010 04/28/97 209085	Uni-ZAP XR	188	1848	454	1848	948	948	411	1	14	15	232

Gene No.	cDNA Clone ID	ATCC Deposit Nr and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
179	HETBX14	209010 04/28/97 209085 05/29/97	Uni-ZAP XR	189	1146	157	1146		74	412	1	14	15	53
180	HFGAB48	209010 04/28/97 209085 05/29/97	Uni-ZAP XR	190	906	156	906	245	245	413	1	30	31	32
181	HFKEI40	209010 04/28/97 209085 05/29/97	Uni-ZAP XR	191	1941	120	1002	213	213	414	1	18	19	218
182	HFHXH68	209010 04/28/97 209085 05/29/97	Lambda ZAP II	192	2118	777	2118	966	966	415	1	23	24	50
183	HGBFO79	209011 04/28/97	Uni-ZAP XR	193	1538	259	1538	273	273	416	1	23	24	49
184	HGLAM56	209011 04/28/97	Uni-ZAP XR	194	1098	68	1098		185	417	1	28	29	69
185	HHLBA89	209011 04/28/97	pBluescript SK-	195	1001	1	1001	324	324	418	1	25	26	39
186	HHPDW05	209011 04/28/97	Uni-ZAP XR	196	1443	1	1443	246	246	419	1	21	22	21
187	HHPSD37	209011 04/28/97	pBluescript	197	1282	66	1282	171	171	420	1	19	20	37

Gene No.	cDNA Clone ID	ATCC Deposit Nr and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of NT Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
188	HHPSTF70	209011 04/28/97	pBluescript	198	951	26	951		162	421	1	16	17	34
189	HHS AK25	209011 04/28/97	Uni-ZAP XR	199	1740	1390	1740	1534	1534	422	1	19	20	31
190	HIASB53	209011 04/28/97	pBluescript	200	1707	401	1195	652	652	423	1	26	27	126
191	HJABZ65	209011 04/28/97	pBluescript SK-	201	779	1	779	23	23	424	1	26	27	68
192	HJPBB39	209011 04/28/97	Uni-ZAP XR	202	1617	188	1605	182	182	425	1	28	29	91
193	HLHSK94	209011 04/28/97	pBluescript	203	1974	1	1794	112	112	426	1	26	27	379
194	HLHTC70	209011 04/28/97	pBluescript	204	1057	229	1057	365	365	427	1	23	24	22
195	HLMITW92	209011 04/28/97	Lambda ZAP II	205	721	1	721	244	244	428	1	25	26	46
196	HLTCY93	209011 04/28/97	Uni-ZAP XR	206	2465	988	2465	1225	1225	429	1			4
197	HLTDB65	209011 04/28/97	Uni-ZAP XR	207	1480	1	1480		371	430	1	15	16	143
198	HMSHM43	209011 04/28/97	Uni-ZAP XR	208	872	1	872	35	35	431	1	18	19	36
199	HMSHQ24	209011 04/28/97	Uni-ZAP XR	209	1779	16	1779	148	148	432	1	24	25	36
200	HNF AH08	209011 04/28/97	Uni-ZAP XR	210	2110	592	2110	611	611	433	1	18	19	191

Gene No.	cDNA Clone ID	ATCC Deposit Nr and Date	Vector	NT SEQ ID NO: X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO: Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
201	HNGAO10	209011 04/28/97	Uni-ZAP XR	211	938	1	938	107	107	434	1	27	28	30
202	HNGBE45	209011 04/28/97	Uni-ZAP XR	212	1551	1	1551	114	114	435	1	21	22	100
203	HNHAZ16	209011 04/28/97	Uni-ZAP XR	213	997	1	997	202	202	436	1	24	25	36
204	HNHCM59	209011 04/28/97	Uni-ZAP XR	214	1496	1	1132		165	437	1	28	29	41
205	HOSFM22	97977 04/04/97 209082 05/29/97	Uni-ZAP XR	215	1308	501	1308		809	438	1			1
206	HPHAC88	97977 04/04/97 209082 05/29/97	Uni-ZAP XR	216	1705	384	1705	549	549	439	1	23	24	24
207	HCDEO95	209007 04/28/97 209083 05/29/97	Uni-ZAP XR	217	999	608	999	273	273	440	1	22	23	54

Table 1 summarizes the information corresponding to each "Gene No." described above. The nucleotide sequence identified as "NT SEQ ID NO:X" was assembled from partially homologous ("overlapping") sequences obtained from the "cDNA clone ID" identified in Table 1 and, in some cases, from additional related DNA clones. The overlapping sequences were assembled into a single contiguous sequence of high redundancy (usually three to five overlapping sequences at each nucleotide position), resulting in a final sequence identified as SEQ ID NO:X.

The cDNA Clone ID was deposited on the date and given the corresponding deposit number listed in "ATCC Deposit No:Z and Date." Some of the deposits contain multiple different clones corresponding to the same gene. "Vector" refers to the type of vector contained in the cDNA Clone ID.

"Total NT Seq." refers to the total number of nucleotides in the contig identified by "Gene No." The deposited clone may contain all or most of these sequences, reflected by the nucleotide position indicated as "5' NT of Clone Seq." and the "3' NT of Clone Seq." of SEQ ID NO:X. The nucleotide position of SEQ ID NO:X of the putative start codon (methionine) is identified as "5' NT of Start Codon." Similarly, the nucleotide position of SEQ ID NO:X of the predicted signal sequence is identified as "5' NT of First AA of Signal Pep."

The translated amino acid sequence, beginning with the methionine, is identified as "AA SEQ ID NO:Y," although other reading frames can also be easily translated using known molecular biology techniques. The polypeptides produced by these alternative open reading frames are specifically contemplated by the present invention.

The first and last amino acid position of SEQ ID NO:Y of the predicted signal peptide is identified as "First AA of Sig Pep" and "Last AA of Sig Pep." The predicted first amino acid position of SEQ ID NO:Y of the secreted portion is identified as "Predicted First AA of Secreted Portion." Finally, the amino acid position of SEQ ID NO:Y of the last amino acid in the open reading frame is identified as "Last AA of ORF."

SEQ ID NO:X and the translated SEQ ID NO:Y are sufficiently accurate and otherwise suitable for a variety of uses well known in the art and described further below. For instance, SEQ ID NO:X is useful for designing nucleic acid hybridization probes that will detect nucleic acid sequences contained in SEQ ID NO:X or the cDNA contained in the deposited clone. These probes will also hybridize to nucleic acid molecules in biological samples, thereby enabling a variety of forensic and diagnostic methods of the invention. Similarly, polypeptides identified from SEQ ID NO:Y may be used to generate antibodies which bind specifically to the secreted proteins encoded by the cDNA clones identified in Table 1.

Nevertheless, DNA sequences generated by sequencing reactions can contain sequencing errors. The errors exist as misidentified nucleotides, or as insertions or deletions of nucleotides in the generated DNA sequence. The erroneously inserted or deleted nucleotides cause frame shifts in the reading frames of the predicted amino acid sequence. In these cases, the predicted amino acid sequence diverges from the actual amino acid sequence, even though the generated DNA sequence may be greater than 99.9% identical to the actual DNA sequence (for example, one base insertion or deletion in an open reading frame of over 1000 bases).

Accordingly, for those applications requiring precision in the nucleotide sequence or the amino acid sequence, the present invention provides not only the generated nucleotide sequence identified as SEQ ID NO:X and the predicted translated amino acid sequence identified as SEQ ID NO:Y, but also a sample of plasmid DNA containing a human cDNA of the invention deposited with the ATCC, as set forth in Table 1. The nucleotide sequence of each deposited clone can readily be determined by sequencing the deposited clone in accordance with known methods. The predicted amino acid sequence can then be verified from such deposits. Moreover, the amino acid sequence of the protein encoded by a particular clone can also be directly determined by peptide sequencing or by expressing the protein in a suitable host cell containing the deposited human cDNA, collecting the protein, and determining its sequence.

The present invention also relates to the genes corresponding to SEQ ID NO:X, SEQ ID NO:Y, or the deposited clone. The corresponding gene can be isolated in accordance with known methods using the sequence information disclosed herein. Such methods include preparing probes or primers from the disclosed sequence and identifying or amplifying the corresponding gene from appropriate sources of genomic material.

Also provided in the present invention are species homologs. Species homologs may be isolated and identified by making suitable probes or primers from the sequences provided herein and screening a suitable nucleic acid source for the desired homologue.

The polypeptides of the invention can be prepared in any suitable manner. Such polypeptides include isolated naturally occurring polypeptides, recombinantly produced polypeptides, synthetically produced polypeptides, or polypeptides produced by a combination of these methods. Means for preparing such polypeptides are well understood in the art.

The polypeptides may be in the form of the secreted protein, including the mature form, or may be a part of a larger protein, such as a fusion protein (see below).

It is often advantageous to include an additional amino acid sequence which contains secretory or leader sequences, pro-sequences, sequences which aid in purification, such as multiple histidine residues, or an additional sequence for stability during recombinant production.

5 The polypeptides of the present invention are preferably provided in an isolated form, and preferably are substantially purified. A recombinantly produced version of a polypeptide, including the secreted polypeptide, can be substantially purified by the one-step method described in Smith and Johnson, *Gene* 67:31-40 (1988). Polypeptides of the invention also can be purified from natural or recombinant sources
10 using antibodies of the invention raised against the secreted protein in methods which are well known in the art.

Signal Sequences

Methods for predicting whether a protein has a signal sequence, as well as the
15 cleavage point for that sequence, are available. For instance, the method of McGeoch, *Virus Res.* 3:271-286 (1985), uses the information from a short N-terminal charged region and a subsequent uncharged region of the complete (uncleaved) protein. The method of von Heinje, *Nucleic Acids Res.* 14:4683-4690 (1986) uses the information from the residues surrounding the cleavage site, typically residues -13 to +2, where +1
20 indicates the amino terminus of the secreted protein. The accuracy of predicting the cleavage points of known mammalian secretory proteins for each of these methods is in the range of 75-80%. (von Heinje, *supra*.) However, the two methods do not always produce the same predicted cleavage point(s) for a given protein.

In the present case, the deduced amino acid sequence of the secreted polypeptide
25 was analyzed by a computer program called SignalP (Henrik Nielsen et al., *Protein Engineering* 10:1-6 (1997)), which predicts the cellular location of a protein based on the amino acid sequence. As part of this computational prediction of localization, the methods of McGeoch and von Heinje are incorporated. The analysis of the amino acid sequences of the secreted proteins described herein by this program provided the results
30 shown in Table 1.

As one of ordinary skill would appreciate, however, cleavage sites sometimes vary from organism to organism and cannot be predicted with absolute certainty. Accordingly, the present invention provides secreted polypeptides having a sequence shown in SEQ ID NO:Y which have an N-terminus beginning within 5 residues (i.e., +
35 or - 5 residues) of the predicted cleavage point. Similarly, it is also recognized that in some cases, cleavage of the signal sequence from a secreted protein is not entirely

uniform, resulting in more than one secreted species. These polypeptides, and the polynucleotides encoding such polypeptides, are contemplated by the present invention.

Moreover, the signal sequence identified by the above analysis may not necessarily predict the naturally occurring signal sequence. For example, the naturally occurring signal sequence may be further upstream from the predicted signal sequence. However, it is likely that the predicted signal sequence will be capable of directing the secreted protein to the ER. These polypeptides, and the polynucleotides encoding such polypeptides, are contemplated by the present invention.

10 **Polynucleotide and Polypeptide Variants**

"Variant" refers to a polynucleotide or polypeptide differing from the polynucleotide or polypeptide of the present invention, but retaining essential properties thereof. Generally, variants are overall closely similar, and, in many regions, identical to the polynucleotide or polypeptide of the present invention.

By a polynucleotide having a nucleotide sequence at least, for example, 95% "identical" to a reference nucleotide sequence of the present invention, it is intended that the nucleotide sequence of the polynucleotide is identical to the reference sequence except that the polynucleotide sequence may include up to five point mutations per each 100 nucleotides of the reference nucleotide sequence encoding the polypeptide. In other words, to obtain a polynucleotide having a nucleotide sequence at least 95% identical to a reference nucleotide sequence, up to 5% of the nucleotides in the reference sequence may be deleted or substituted with another nucleotide, or a number of nucleotides up to 5% of the total nucleotides in the reference sequence may be inserted into the reference sequence. The query sequence may be an entire sequence shown in Table 1, the ORF (open reading frame), or any fragment specified as described herein.

As a practical matter, whether any particular nucleic acid molecule or polypeptide is at least 90%, 95%, 96%, 97%, 98% or 99% identical to a nucleotide sequence of the present invention can be determined conventionally using known computer programs. A preferred method for determining the best overall match between a query sequence (a sequence of the present invention) and a subject sequence, also referred to as a global sequence alignment, can be determined using the FASTDB computer program based on the algorithm of Brutlag et al. (Comp. App. Biosci. (1990) 6:237-245). In a sequence alignment the query and subject sequences are both DNA sequences. An RNA sequence can be compared by converting U's to T's. The result of said global sequence alignment is in percent identity. Preferred parameters used in a FASTDB alignment of DNA sequences to calculate percent identity are: Matrix=Unitary, k-tuple=4, Mismatch Penalty=1, Joining Penalty=30, Randomization

Group Length=0, Cutoff Score=1, Gap Penalty=5, Gap Size Penalty 0.05, Window Size=500 or the length of the subject nucleotide sequence, whichever is shorter.

If the subject sequence is shorter than the query sequence because of 5' or 3' deletions, not because of internal deletions, a manual correction must be made to the results. This is because the FASTDB program does not account for 5' and 3' truncations of the subject sequence when calculating percent identity. For subject sequences truncated at the 5' or 3' ends, relative to the query sequence, the percent identity is corrected by calculating the number of bases of the query sequence that are 5' and 3' of the subject sequence, which are not matched/aligned, as a percent of the total bases of the query sequence. Whether a nucleotide is matched/aligned is determined by results of the FASTDB sequence alignment. This percentage is then subtracted from the percent identity, calculated by the above FASTDB program using the specified parameters, to arrive at a final percent identity score. This corrected score is what is used for the purposes of the present invention. Only bases outside the 5' and 3' bases of the subject sequence, as displayed by the FASTDB alignment, which are not matched/aligned with the query sequence, are calculated for the purposes of manually adjusting the percent identity score.

For example, a 90 base subject sequence is aligned to a 100 base query sequence to determine percent identity. The deletions occur at the 5' end of the subject sequence and therefore, the FASTDB alignment does not show a matched/alignment of the first 10 bases at 5' end. The 10 unpaired bases represent 10% of the sequence (number of bases at the 5' and 3' ends not matched/total number of bases in the query sequence) so 10% is subtracted from the percent identity score calculated by the FASTDB program. If the remaining 90 bases were perfectly matched the final percent identity would be 90%. In another example, a 90 base subject sequence is compared with a 100 base query sequence. This time the deletions are internal deletions so that there are no bases on the 5' or 3' of the subject sequence which are not matched/aligned with the query. In this case the percent identity calculated by FASTDB is not manually corrected. Once again, only bases 5' and 3' of the subject sequence which are not matched/aligned with the query sequence are manually corrected for. No other manual corrections are to be made for the purposes of the present invention.

By a polypeptide having an amino acid sequence at least, for example, 95% "identical" to a query amino acid sequence of the present invention, it is intended that the amino acid sequence of the subject polypeptide is identical to the query sequence except that the subject polypeptide sequence may include up to five amino acid alterations per each 100 amino acids of the query amino acid sequence. In other words, to obtain a polypeptide having an amino acid sequence at least 95% identical to a query

amino acid sequence, up to 5% of the amino acid residues in the subject sequence may be inserted, deleted, (indels) or substituted with another amino acid. These alterations of the reference sequence may occur at the amino or carboxy terminal positions of the reference amino acid sequence or anywhere between those terminal positions,

5 interspersed either individually among residues in the reference sequence or in one or more contiguous groups within the reference sequence.

As a practical matter, whether any particular polypeptide is at least 90%, 95%, 96%, 97%, 98% or 99% identical to, for instance, the amino acid sequences shown in Table 1 or to the amino acid sequence encoded by deposited DNA clone can be
10 determined conventionally using known computer programs. A preferred method for determining the best overall match between a query sequence (a sequence of the present invention) and a subject sequence, also referred to as a global sequence alignment, can be determined using the FASTDB computer program based on the algorithm of Brutlag et al. (Comp. App. Biosci. (1990) 6:237-245). In a sequence alignment the query and
15 subject sequences are either both nucleotide sequences or both amino acid sequences. The result of said global sequence alignment is in percent identity. Preferred parameters used in a FASTDB amino acid alignment are: Matrix=PAM 0, k-tuple=2, Mismatch Penalty=1, Joining Penalty=20, Randomization Group Length=0, Cutoff Score=1, Window Size=sequence length, Gap Penalty=5, Gap Size Penalty=0.05, Window
20 Size=500 or the length of the subject amino acid sequence, whichever is shorter.

If the subject sequence is shorter than the query sequence due to N- or C-terminal deletions, not because of internal deletions, a manual correction must be made to the results. This is because the FASTDB program does not account for N- and C-terminal truncations of the subject sequence when calculating global percent identity.
25 For subject sequences truncated at the N- and C-termini, relative to the the query sequence, the percent identity is corrected by calculating the number of residues of the query sequence that are N- and C-terminal of the subject sequence, which are not matched/aligned with a corresponding subject residue, as a percent of the total bases of the query sequence. Whether a residue is matched/aligned is determined by results of
30 the FASTDB sequence alignment. This percentage is then subtracted from the percent identity, calculated by the above FASTDB program using the specified parameters, to arrive at a final percent identity score. This final percent identity score is what is used for the purposes of the present invention. Only residues to the N- and C-termini of the subject sequence, which are not matched/aligned with the query sequence, are
35 considered for the purposes of manually adjusting the percent identity score. That is, only query residue positions outside the farthest N- and C-terminal residues of the subject sequence.

For example, a 90 amino acid residue subject sequence is aligned with a 100 residue query sequence to determine percent identity. The deletion occurs at the N-terminus of the subject sequence and therefore, the FASTDB alignment does not show a matching/alignment of the first 10 residues at the N-terminus. The 10 unpaired
5 residues represent 10% of the sequence (number of residues at the N- and C- termini not matched/total number of residues in the query sequence) so 10% is subtracted from the percent identity score calculated by the FASTDB program. If the remaining 90 residues were perfectly matched the final percent identity would be 90%. In another example, a 90 residue subject sequence is compared with a 100 residue query sequence.
10 This time the deletions are internal deletions so there are no residues at the N- or C-termini of the subject sequence which are not matched/aligned with the query. In this case the percent identity calculated by FASTDB is not manually corrected. Once again, only residue positions outside the N- and C-terminal ends of the subject sequence, as displayed in the FASTDB alignment, which are not matched/aligned with the query
15 sequence are manually corrected for. No other manual corrections are to made for the purposes of the present invention.

The variants may contain alterations in the coding regions, non-coding regions, or both. Especially preferred are polynucleotide variants containing alterations which produce silent substitutions, additions, or deletions, but do not alter the properties or
20 activities of the encoded polypeptide. Nucleotide variants produced by silent substitutions due to the degeneracy of the genetic code are preferred. Moreover, variants in which 5-10, 1-5, or 1-2 amino acids are substituted, deleted, or added in any combination are also preferred. Polynucleotide variants can be produced for a variety of reasons, e.g., to optimize codon expression for a particular host (change codons in
25 the human mRNA to those preferred by a bacterial host such as *E. coli*).

Naturally occurring variants are called "allelic variants," and refer to one of several alternate forms of a gene occupying a given locus on a chromosome of an organism. (Genes II, Lewin, B., ed., John Wiley & Sons, New York (1985).) These allelic variants can vary at either the polynucleotide and/or polypeptide level.
30 Alternatively, non-naturally occurring variants may be produced by mutagenesis techniques or by direct synthesis.

Using known methods of protein engineering and recombinant DNA technology, variants may be generated to improve or alter the characteristics of the polypeptides of the present invention. For instance, one or more amino acids can be
35 deleted from the N-terminus or C-terminus of the secreted protein without substantial loss of biological function. The authors of Ron et al., *J. Biol. Chem.* 268: 2984-2988 (1993), reported variant KGF proteins having heparin binding activity even after

deleting 3, 8, or 27 amino-terminal amino acid residues. Similarly, Interferon gamma exhibited up to ten times higher activity after deleting 8-10 amino acid residues from the carboxy terminus of this protein. (Dobeli et al., J. Biotechnology 7:199-216 (1988).)

Moreover, ample evidence demonstrates that variants often retain a biological activity similar to that of the naturally occurring protein. For example, Gayle and coworkers (J. Biol. Chem 268:22105-22111 (1993)) conducted extensive mutational analysis of human cytokine IL-1a. They used random mutagenesis to generate over 3,500 individual IL-1a mutants that averaged 2.5 amino acid changes per variant over the entire length of the molecule. Multiple mutations were examined at every possible amino acid position. The investigators found that "[m]ost of the molecule could be altered with little effect on either [binding or biological activity]." (See, Abstract.) In fact, only 23 unique amino acid sequences, out of more than 3,500 nucleotide sequences examined, produced a protein that significantly differed in activity from wild-type.

Furthermore, even if deleting one or more amino acids from the N-terminus or C-terminus of a polypeptide results in modification or loss of one or more biological functions, other biological activities may still be retained. For example, the ability of a deletion variant to induce and/or to bind antibodies which recognize the secreted form will likely be retained when less than the majority of the residues of the secreted form are removed from the N-terminus or C-terminus. Whether a particular polypeptide lacking N- or C-terminal residues of a protein retains such immunogenic activities can readily be determined by routine methods described herein and otherwise known in the art.

Thus, the invention further includes polypeptide variants which show substantial biological activity. Such variants include deletions, insertions, inversions, repeats, and substitutions selected according to general rules known in the art so as have little effect on activity. For example, guidance concerning how to make phenotypically silent amino acid substitutions is provided in Bowie, J. U. et al., Science 247:1306-1310 (1990), wherein the authors indicate that there are two main strategies for studying the tolerance of an amino acid sequence to change.

The first strategy exploits the tolerance of amino acid substitutions by natural selection during the process of evolution. By comparing amino acid sequences in different species, conserved amino acids can be identified. These conserved amino acids are likely important for protein function. In contrast, the amino acid positions where substitutions have been tolerated by natural selection indicates that these positions are not critical for protein function. Thus, positions tolerating amino acid substitution could be modified while still maintaining biological activity of the protein.

The second strategy uses genetic engineering to introduce amino acid changes at specific positions of a cloned gene to identify regions critical for protein function. For example, site directed mutagenesis or alanine-scanning mutagenesis (introduction of single alanine mutations at every residue in the molecule) can be used. (Cunningham and Wells, Science 244:1081-1085 (1989).) The resulting mutant molecules can then be tested for biological activity.

As the authors state, these two strategies have revealed that proteins are surprisingly tolerant of amino acid substitutions. The authors further indicate which amino acid changes are likely to be permissive at certain amino acid positions in the protein. For example, most buried (within the tertiary structure of the protein) amino acid residues require nonpolar side chains, whereas few features of surface side chains are generally conserved. Moreover, tolerated conservative amino acid substitutions involve replacement of the aliphatic or hydrophobic amino acids Ala, Val, Leu and Ile; replacement of the hydroxyl residues Ser and Thr; replacement of the acidic residues Asp and Glu; replacement of the amide residues Asn and Gln, replacement of the basic residues Lys, Arg, and His; replacement of the aromatic residues Phe, Tyr, and Trp, and replacement of the small-sized amino acids Ala, Ser, Thr, Met, and Gly.

Besides conservative amino acid substitution, variants of the present invention include (i) substitutions with one or more of the non-conserved amino acid residues, where the substituted amino acid residues may or may not be one encoded by the genetic code, or (ii) substitution with one or more of amino acid residues having a substituent group, or (iii) fusion of the mature polypeptide with another compound, such as a compound to increase the stability and/or solubility of the polypeptide (for example, polyethylene glycol), or (iv) fusion of the polypeptide with additional amino acids, such as an IgG Fc fusion region peptide, or leader or secretory sequence, or a sequence facilitating purification. Such variant polypeptides are deemed to be within the scope of those skilled in the art from the teachings herein.

For example, polypeptide variants containing amino acid substitutions of charged amino acids with other charged or neutral amino acids may produce proteins with improved characteristics, such as less aggregation. Aggregation of pharmaceutical formulations both reduces activity and increases clearance due to the aggregate's immunogenic activity. (Pinckard et al., Clin. Exp. Immunol. 2:331-340 (1967); Robbins et al., Diabetes 36: 838-845 (1987); Cleland et al., Crit. Rev. Therapeutic Drug Carrier Systems 10:307-377 (1993).)

Polynucleotide and Polypeptide Fragments

In the present invention, a "polynucleotide fragment" refers to a short polynucleotide having a nucleic acid sequence contained in the deposited clone or shown in SEQ ID NO:X. The short nucleotide fragments are preferably at least about 15 nt, and more preferably at least about 20 nt, still more preferably at least about 30 nt, and even more preferably, at least about 40 nt in length. A fragment "at least 20 nt in length," for example, is intended to include 20 or more contiguous bases from the cDNA sequence contained in the deposited clone or the nucleotide sequence shown in SEQ ID NO:X. These nucleotide fragments are useful as diagnostic probes and primers as discussed herein. Of course, larger fragments (e.g., 50, 150, 500, 600, 2000 nucleotides) are preferred.

Moreover, representative examples of polynucleotide fragments of the invention, include, for example, fragments having a sequence from about nucleotide number 1-50, 51-100, 101-150, 151-200, 201-250, 251-300, 301-350, 351-400, 401-450, 451-500, 501-550, 551-600, 651-700, 701-750, 751-800, 800-850, 851-900, 901-950, 951-1000, 1001-1050, 1051-1100, 1101-1150, 1151-1200, 1201-1250, 1251-1300, 1301-1350, 1351-1400, 1401-1450, 1451-1500, 1501-1550, 1551-1600, 1601-1650, 1651-1700, 1701-1750, 1751-1800, 1801-1850, 1851-1900, 1901-1950, 1951-2000, or 2001 to the end of SEQ ID NO:X or the cDNA contained in the deposited clone. In this context "about" includes the particularly recited ranges, larger or smaller by several (5, 4, 3, 2, or 1) nucleotides, at either terminus or at both termini. Preferably, these fragments encode a polypeptide which has biological activity. More preferably, these polynucleotides can be used as probes or primers as discussed herein.

In the present invention, a "polypeptide fragment" refers to a short amino acid sequence contained in SEQ ID NO:Y or encoded by the cDNA contained in the deposited clone. Protein fragments may be "free-standing," or comprised within a larger polypeptide of which the fragment forms a part or region, most preferably as a single continuous region. Representative examples of polypeptide fragments of the invention, include, for example, fragments from about amino acid number 1-20, 21-40, 41-60, 61-80, 81-100, 102-120, 121-140, 141-160, or 161 to the end of the coding region. Moreover, polypeptide fragments can be about 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, 130, 140, or 150 amino acids in length. In this context "about" includes the particularly recited ranges, larger or smaller by several (5, 4, 3, 2, or 1) amino acids, at either extreme or at both extremes.

Preferred polypeptide fragments include the secreted protein as well as the mature form. Further preferred polypeptide fragments include the secreted protein or the mature form having a continuous series of deleted residues from the amino or the